



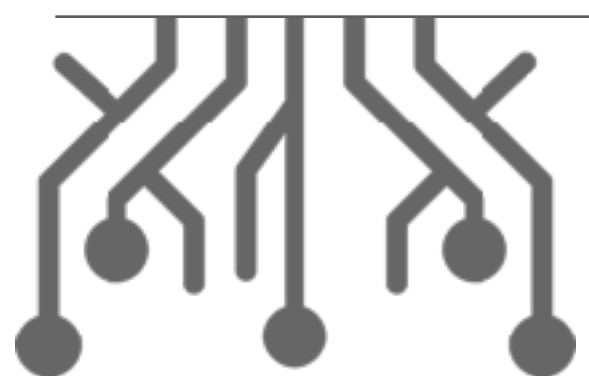
FCO-IM

*The meaningful bridge between
Business & IT,
LLM & Data*



HISTORICAL

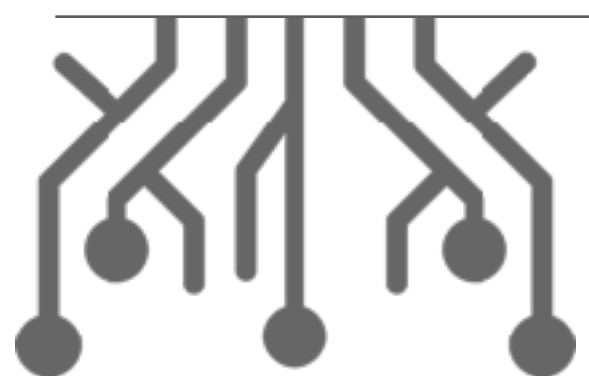
manual





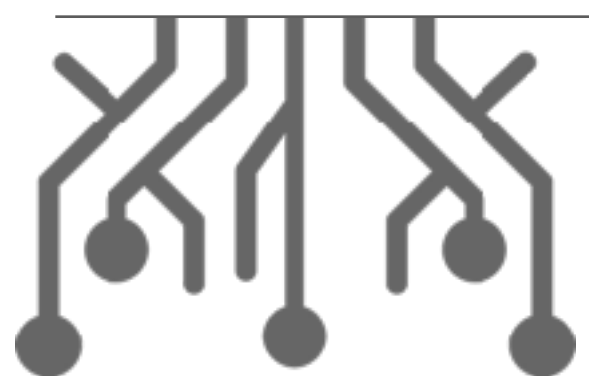
RECENTLY

mechanical





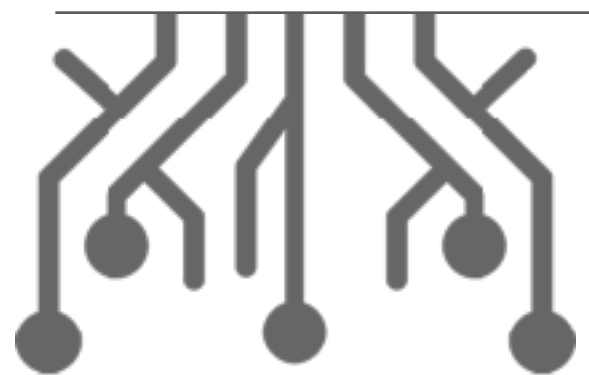
NOW
electronically





DATA IN SILOS

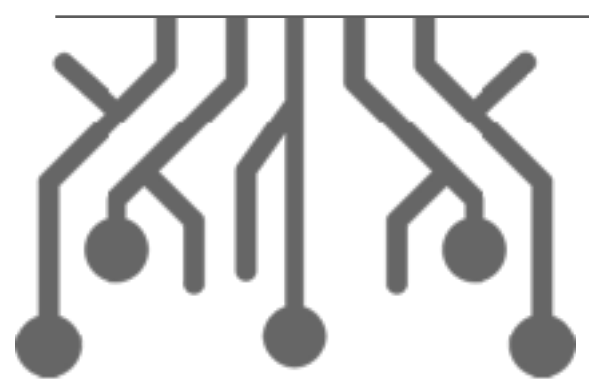
reality





DATA IS FRAGMENTED

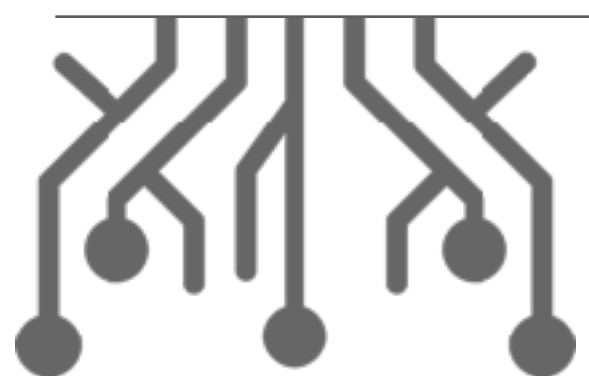
what is the connection?



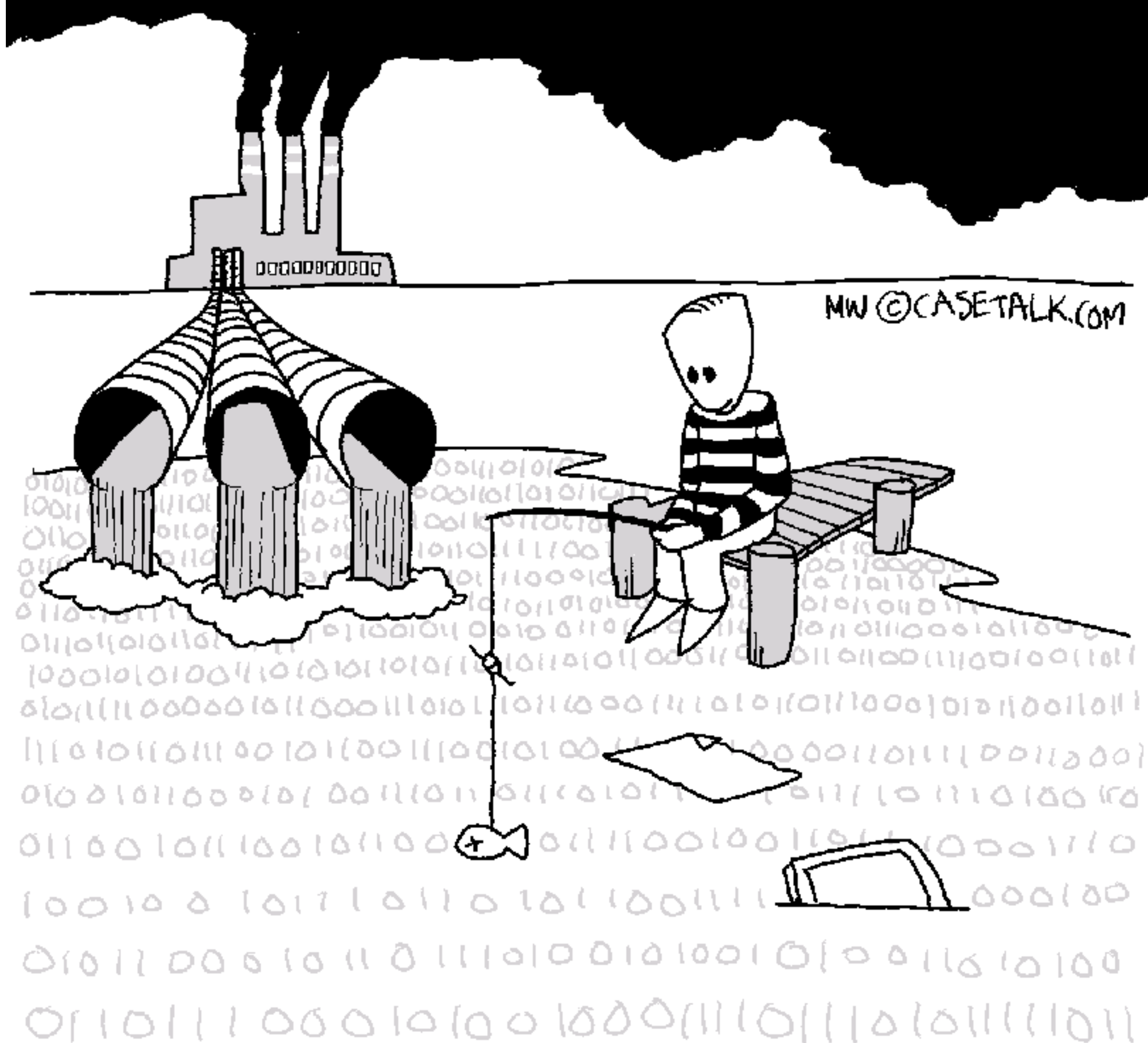


DATA AS ONE

requires communication



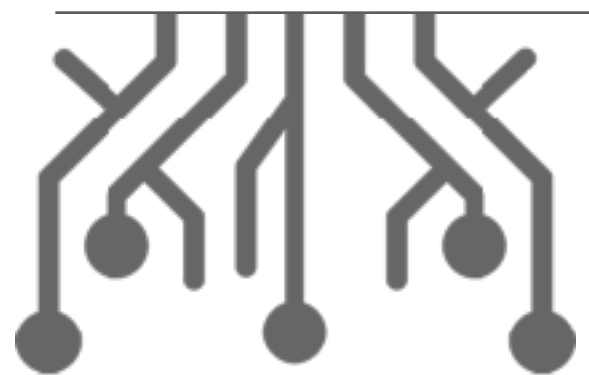
LEARN TO
BUILD A DATA LAKE ONCE
AND YOU'LL BE FISHING FOR
A LIFETIME..





COMMUNICATION

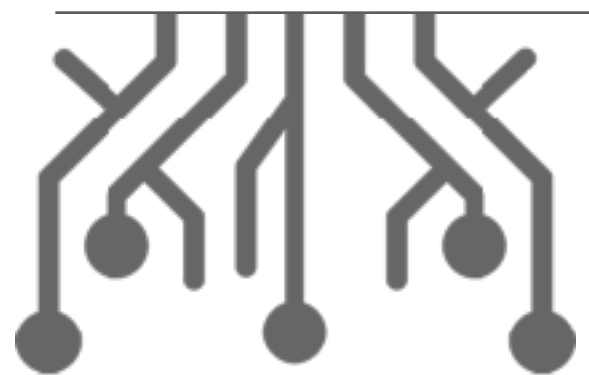
data is not communication





COMMUNICATION

*is more than just **words***



DATA IS REAL
BUT IS NOT
REALITY

Marco Wobben



Ceci n'est pas une pipe

FULLY
COMMUNICATION
ORIENTED

INFORMATION
MODELING

DAMA NL



“Objects are in fact Facts”

GUIDO BAKEMA

Guido Bakema is a retired Professor of Applied Sciences at the HAN University of Applied Sciences, and one of three founding fathers of FCO-IM. Without any doubt, he was the biggest driving force behind the research of FCO-IM. During his many years as lecturer he was responsible for tool and transformation development. In his spare time, he wrote the very first FCO-IM book. And amazingly, he still found the time to visit many universities across the world. Spreading the word of fact oriented modeling to the world. After his recent retirement, he holds a honourable position as ambassador of CaseTalk.



JAN PIETER ZWART

Jan Pieter Zwart is one of the three founding fathers of FCO-IM. Jan Pieter has recently retired as teacher, researcher and publisher at the HAN University of Applied Science. Originally he wrote the FCO-IM book, and recently published a new book for self studying FCO-IM. Whenever a question or issue arises, Jan Pieter has the brain to deeply analyse it and come back with the only correct answer.

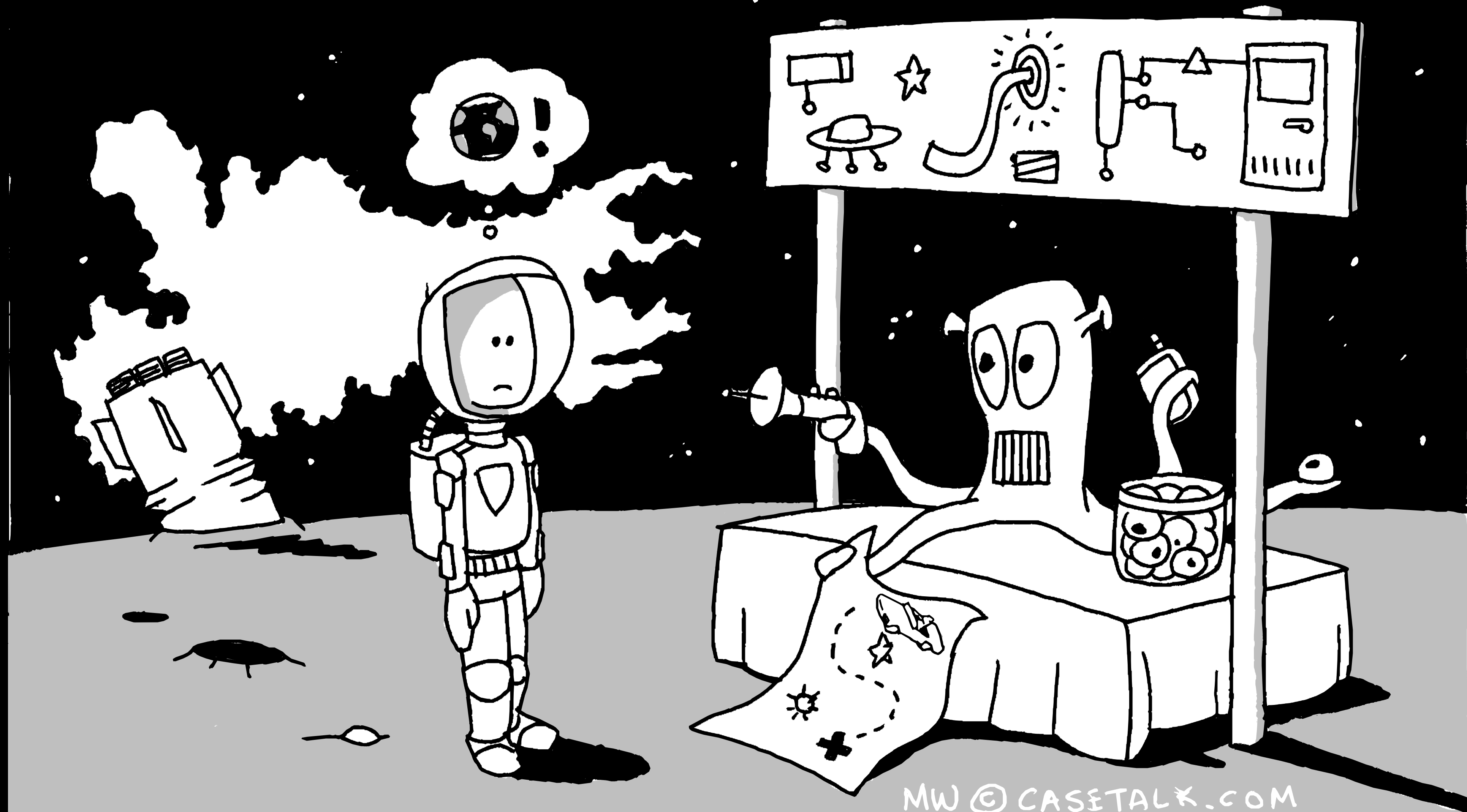


HARM VAN DER LEK

Harm van der Lek is one of the founding fathers of FCO-IM. Encouraged by Professor Guido Bakema to use NIAM in practice, Harm found an elegant way to enhance it into FCO-IM. After that Harm has been involved in many Data Warehouse projects and build automation tools for them. A bundle of his columns is available in a book called 'Sterren en Dimensies'. He teaches about temporal aspects of data, and writes books about science and math.

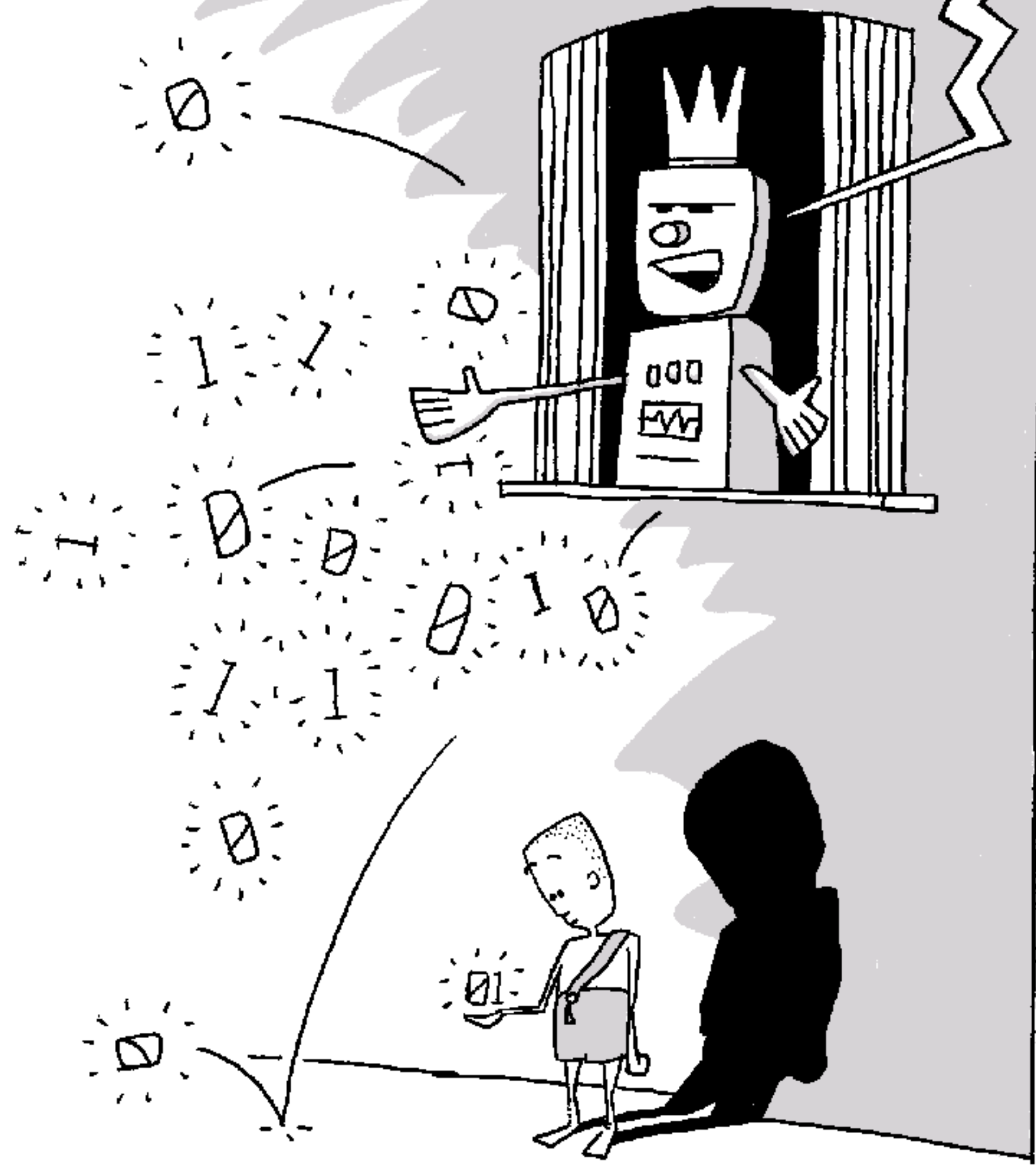


WHEN NEED AND SERVICE
DO NOT SHARE A COMMON LANGUAGE



When you're hungry for information..

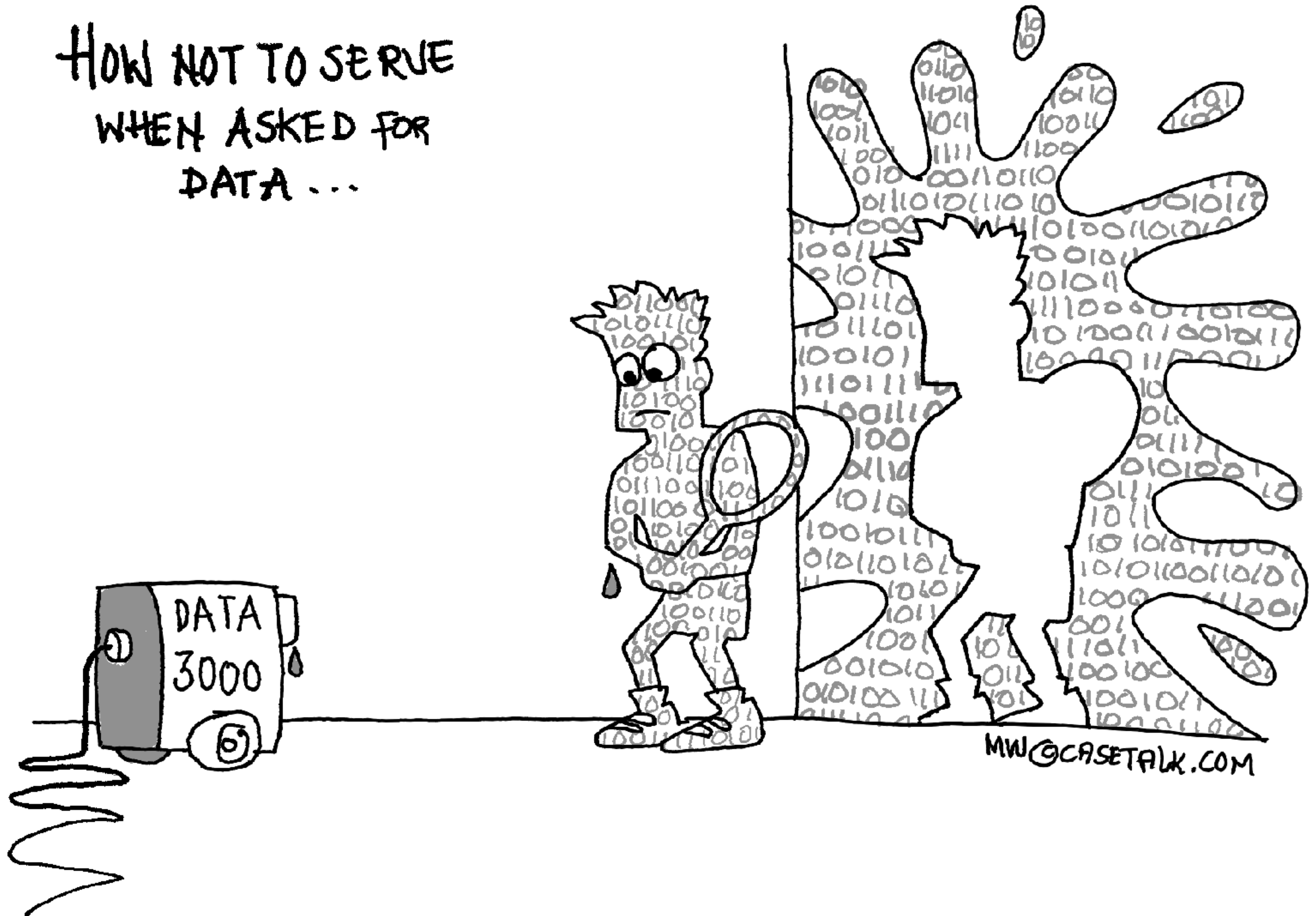
LET THEM EAT DATA



MW© CASETALK.COM

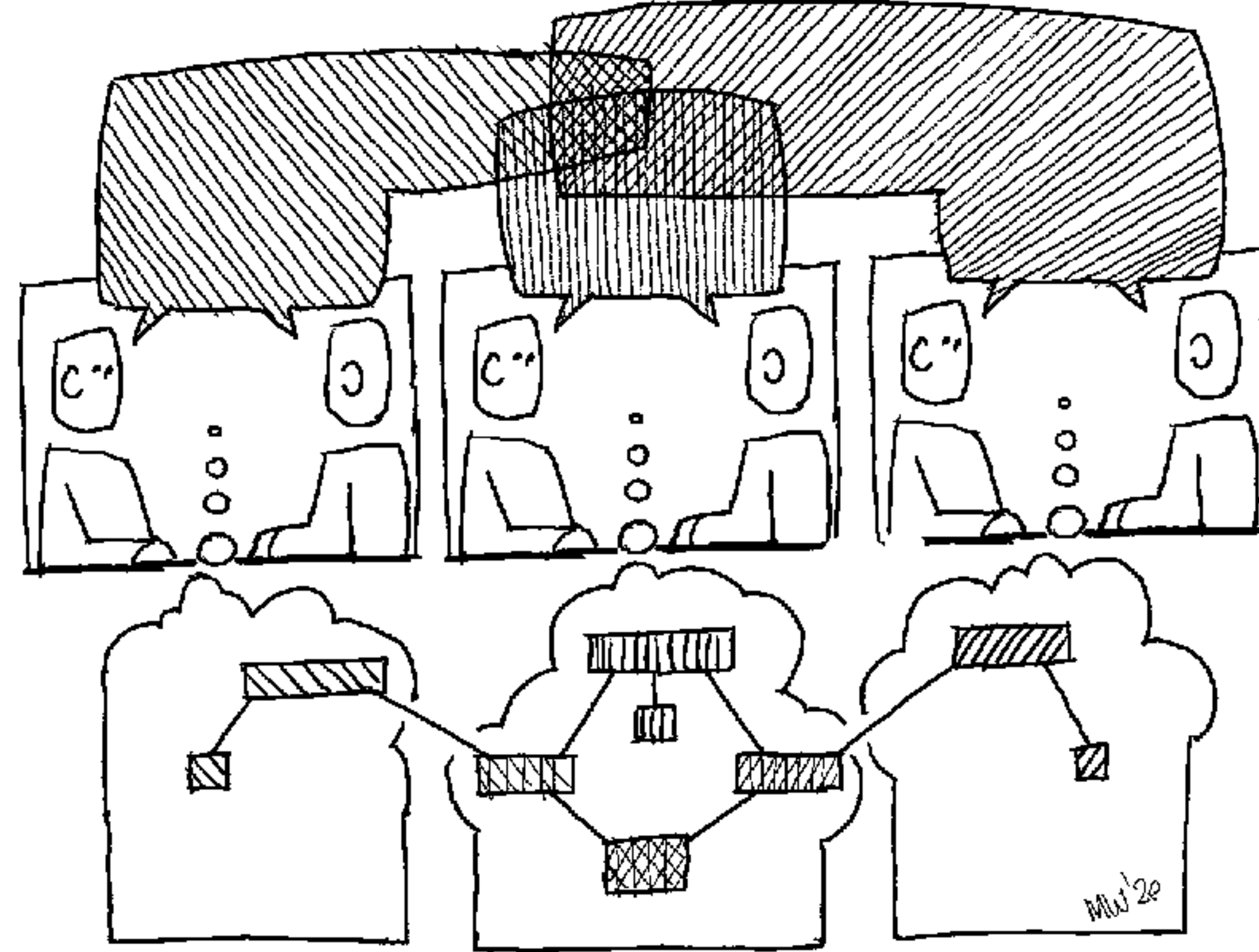


HOW NOT TO SERVE WHEN ASKED FOR DATA ...



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Domains and Languages



▽ STANDARDIZE
▽ ALIGNMENT

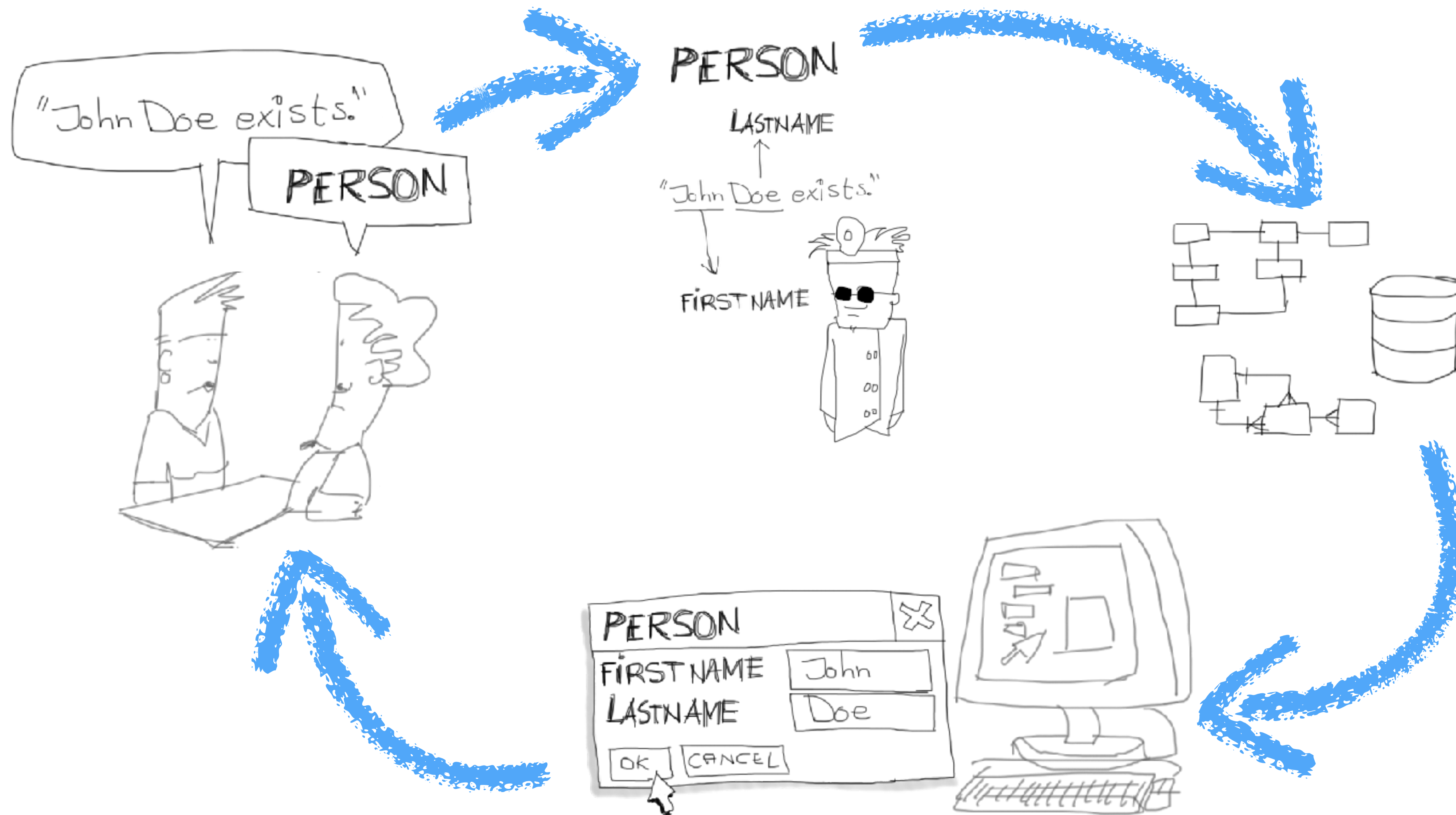
▨ ▨ ▨ domain specific Language

▨ ▨ ▨ shared domain Language

▨ shared common Language

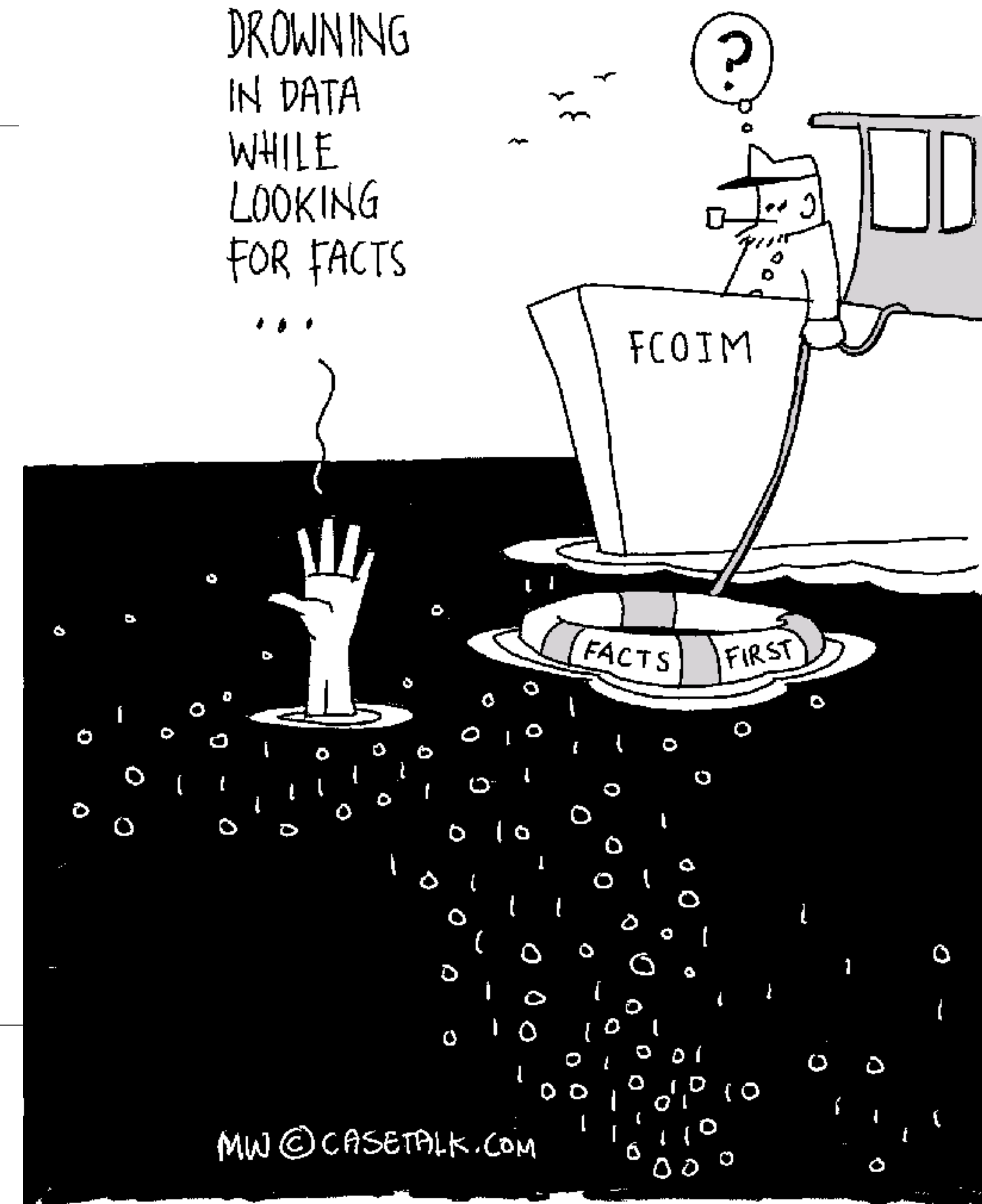
UNDER FULL
GOVERNANCE

FULLY COMMUNICATION ORIENTED INFORMATION MODELING



HOW DOES THAT WORK?

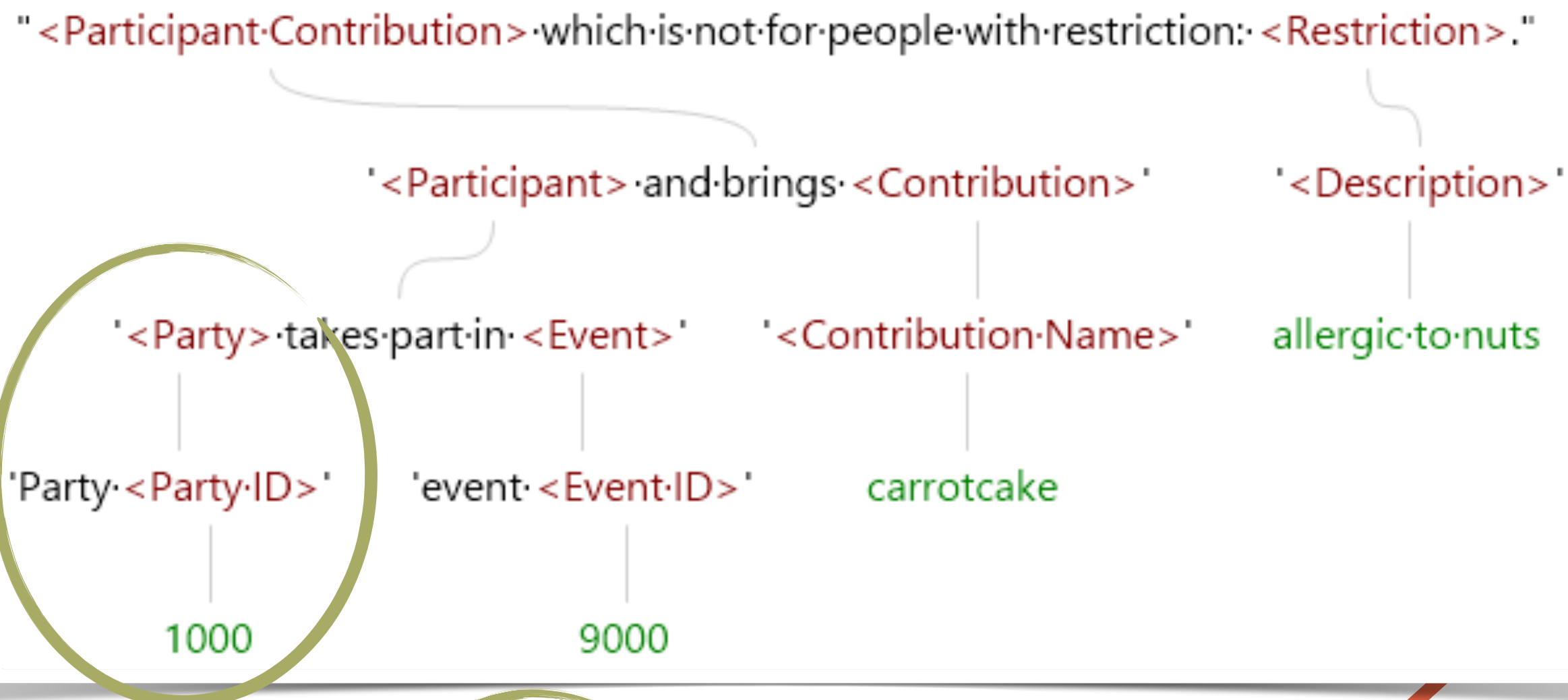
- Modeling based on facts as elementary statements
- Focus on semantics rather than syntax
- Examples:
 - “Customer 9001 places order 2025987.”
 - “The price of product 25637 is €24,98.”





CASE TALK

- 1 [Contribution Restriction]
- 2 "Party 1000 takes part in event 9000 and brings carrotcake which is not for people with restriction: allergic to nuts."

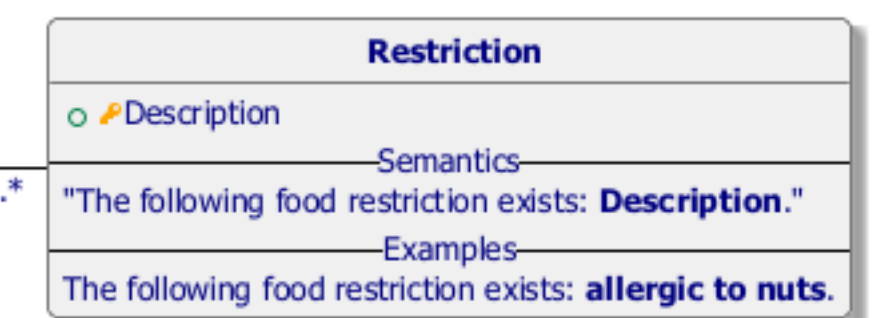
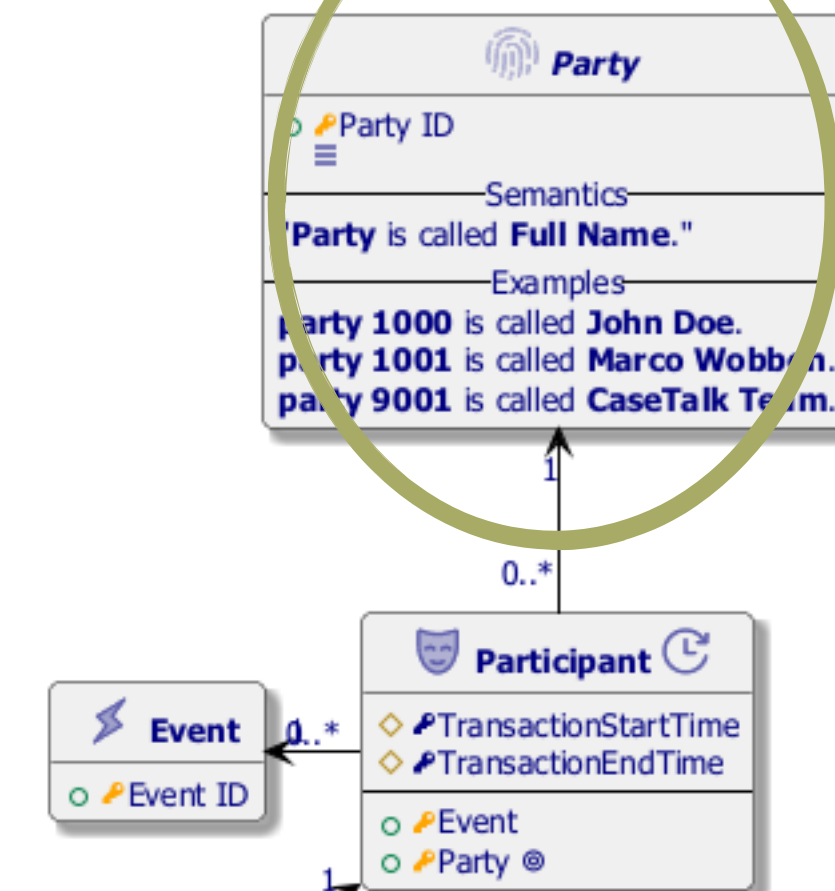
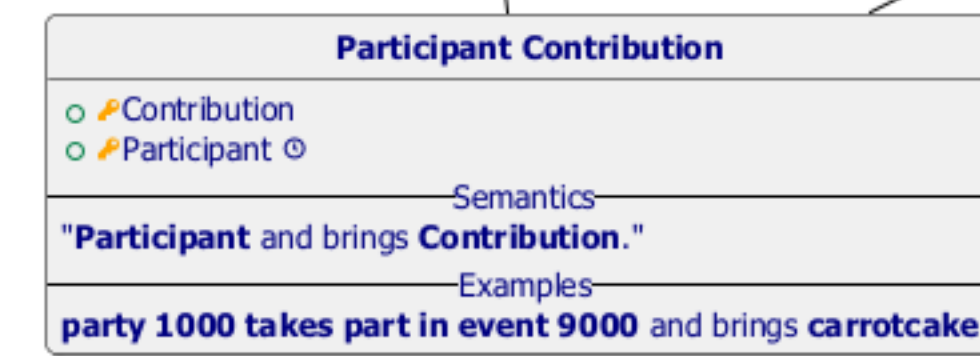
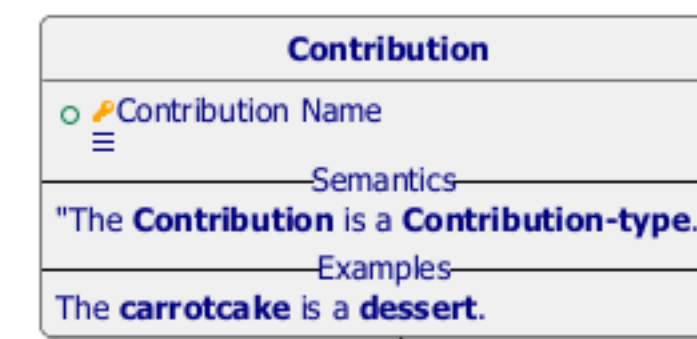
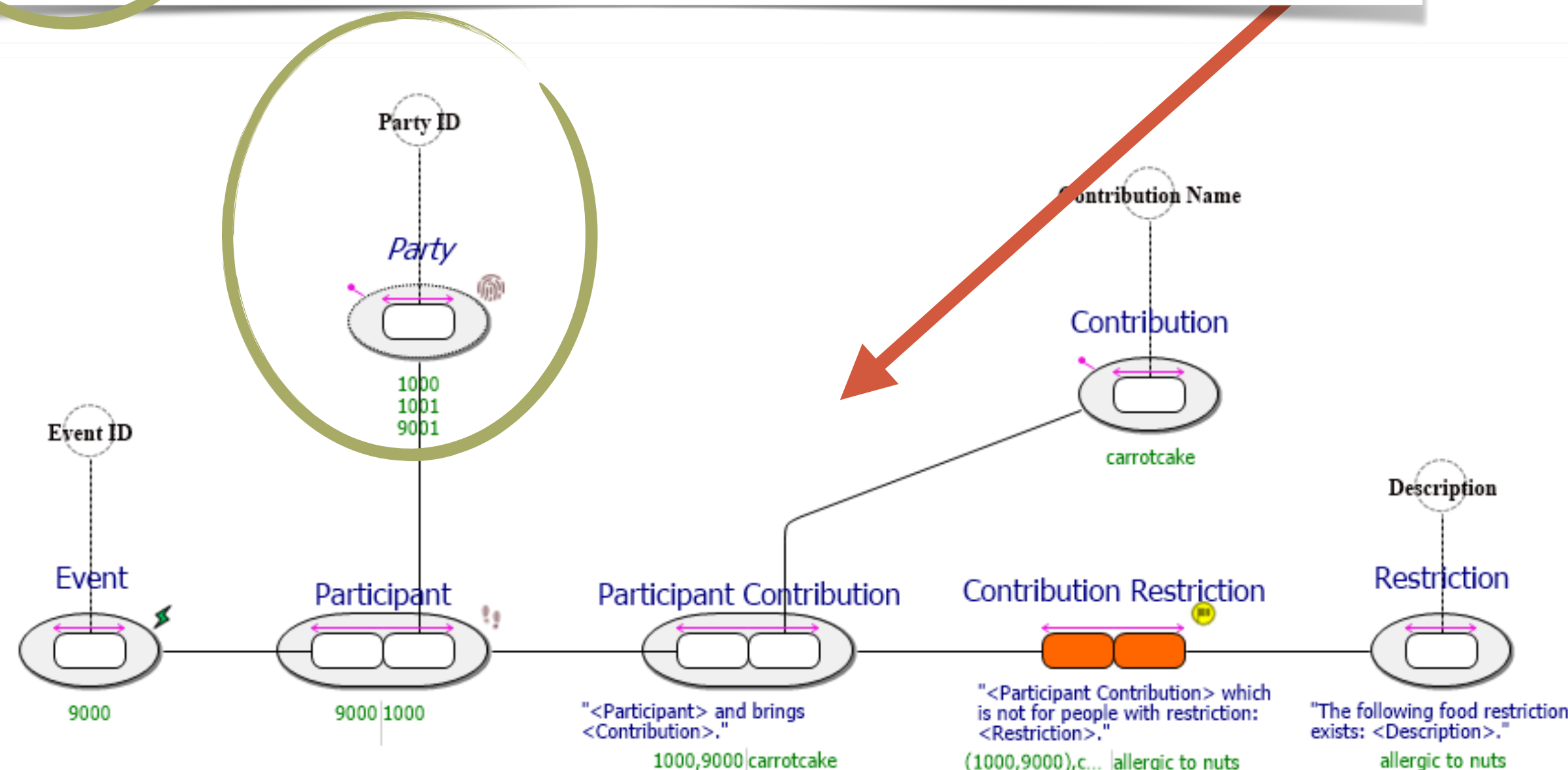


Add Fact Statements

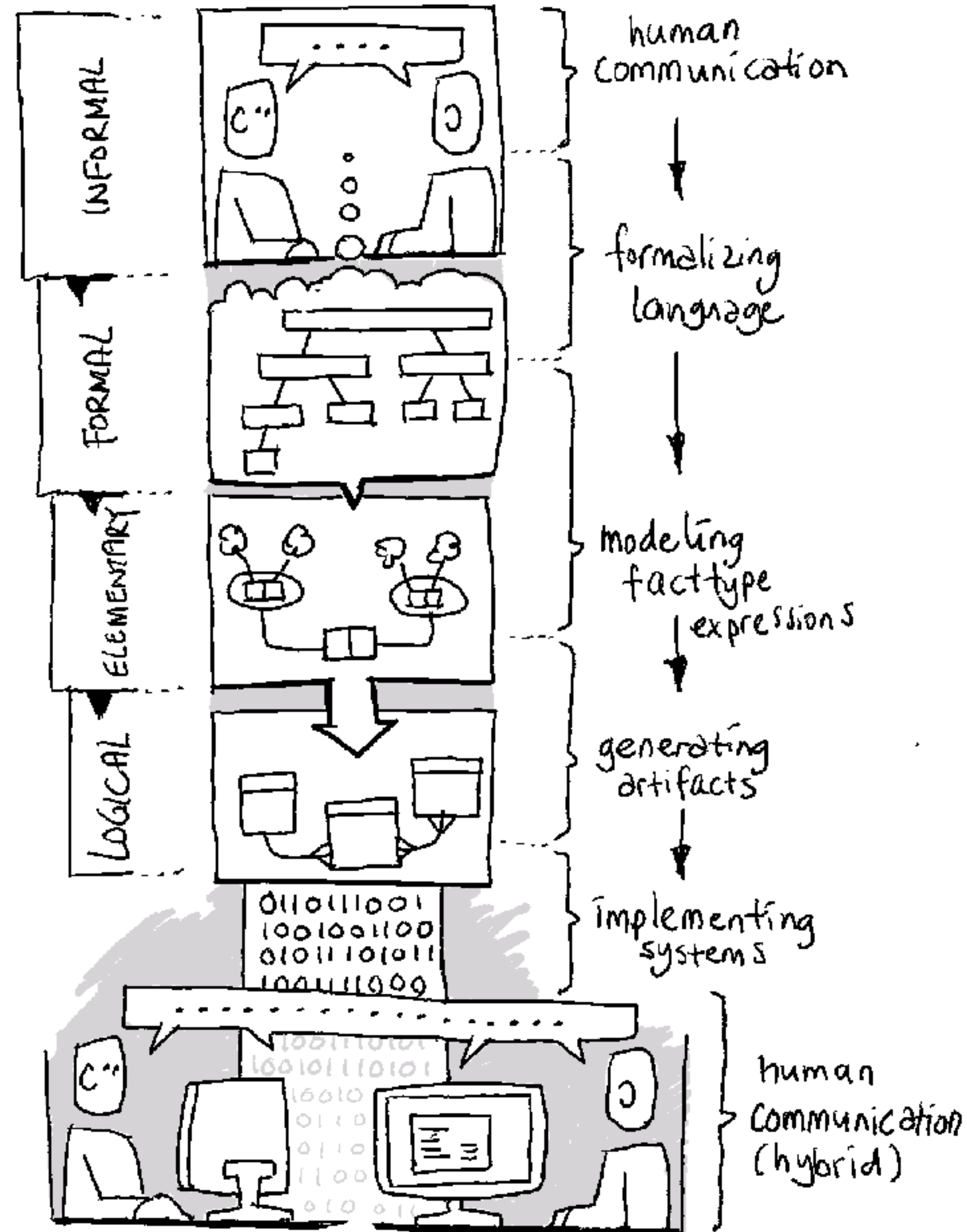
Extend Information Grammar

Enlarge Information Diagram

Update Artifacts



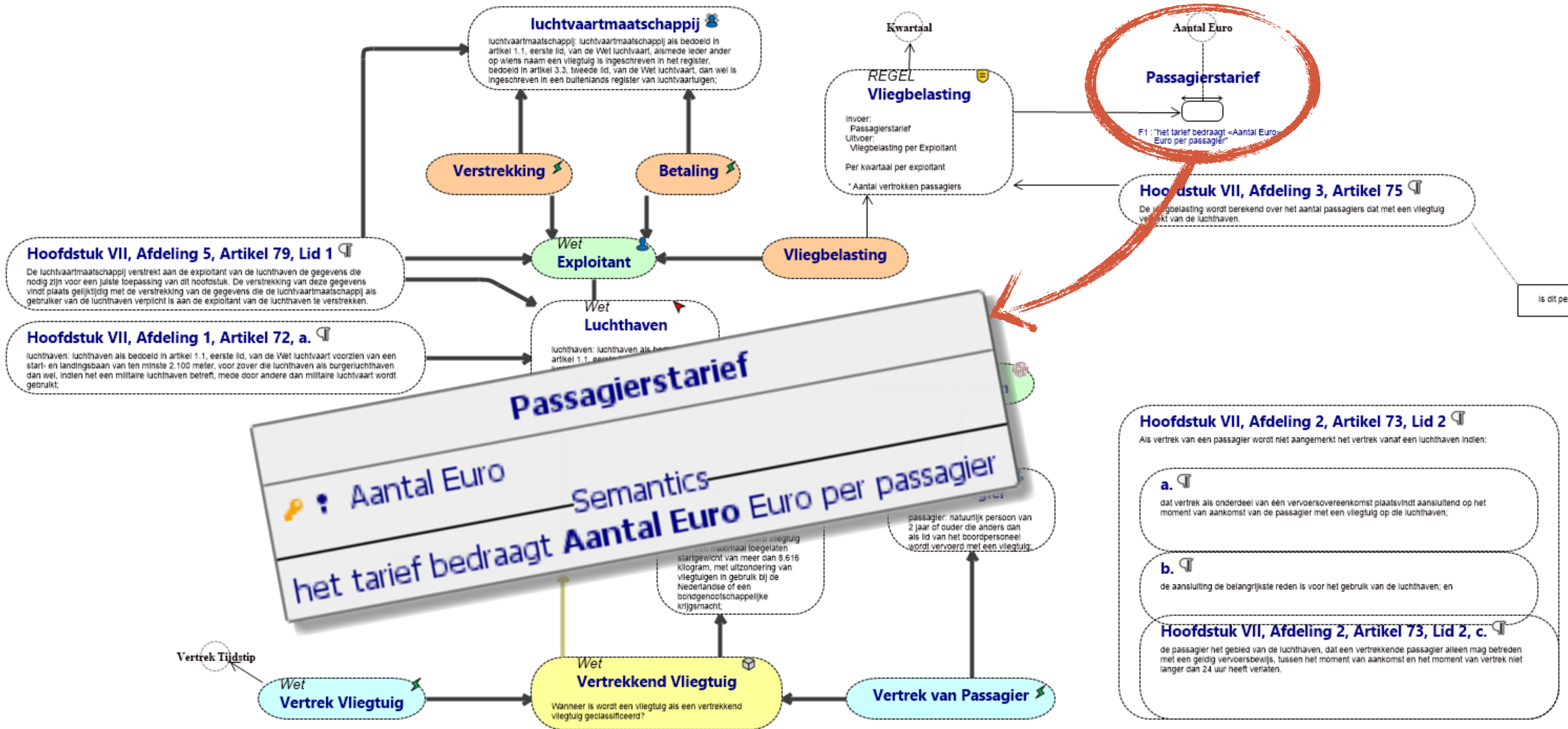
COMMUNICATION CYCLE IN IT



∞ ...THE NEVER ENDING STORY

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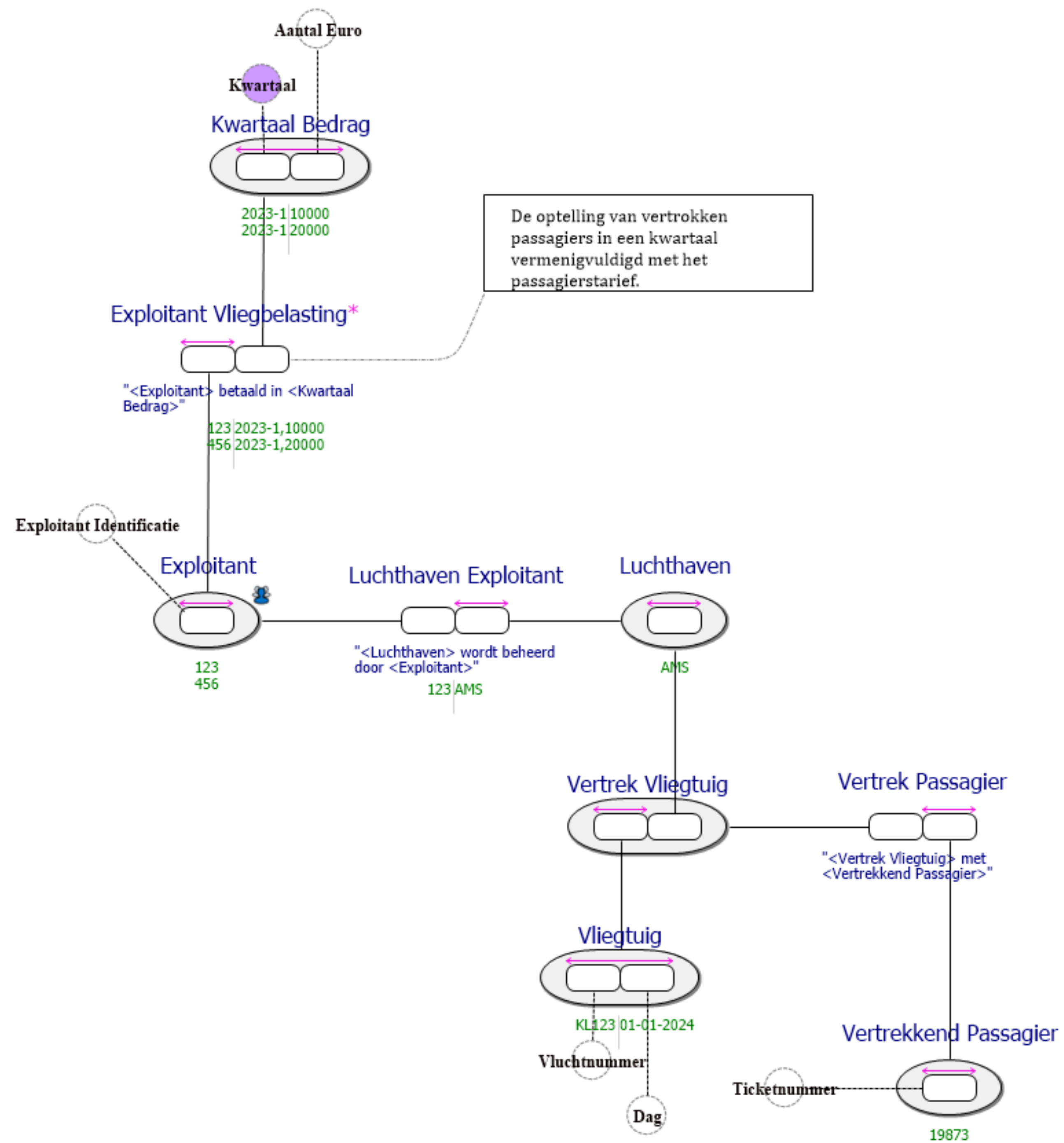




Exploitant Vliegbelasting:
“Exploitant 123 betaald in kwartaal 2023-1, 10000 Euro.”

Luchthaven Exploitant:
“Luchthaven AMS wordt beheerd door exploitant 123.”

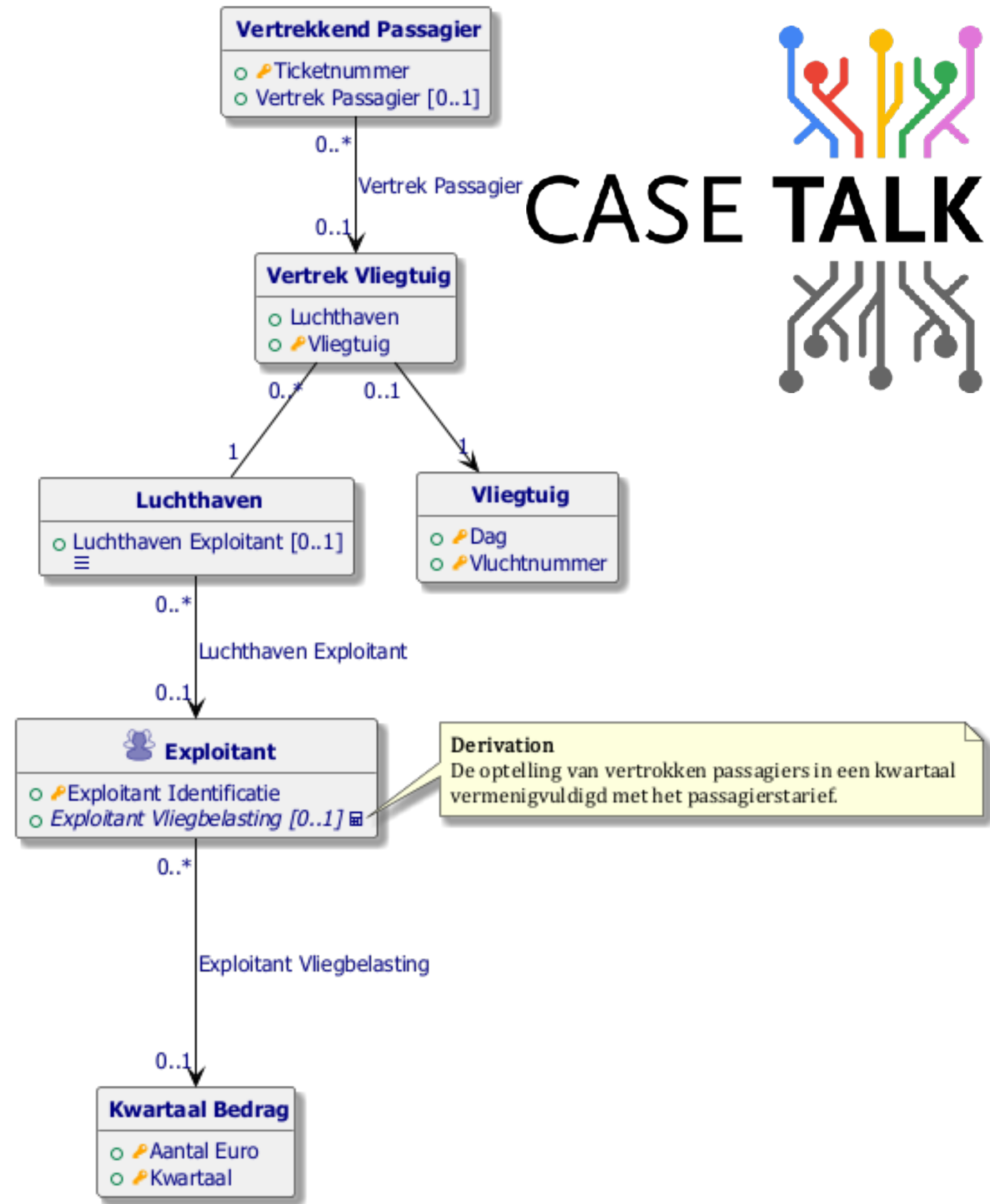
Vertrekkend Passagier:
“Vliegtuig met vluchtnummer KL123 op 1-1-2024, vertrekt van luchthaven AMS met passagier 19873.”



Exploitant Vliegbelasting:
“Exploitant 123 betaald in kwartaal 2023-1, 10000 Euro.”

Luchthaven Exploitant:
“Luchthaven AMS wordt beheerd door exploitant 123.”

Vertrekkend Passagier:
“Vliegtuig met vluchtnummer KL123 op 1-1-2024, vertrekt van luchthaven AMS met passagier 19873.”





INFORMATION MODEL

NOT

tables, entities, classes,
columns, or properties

NOT

xml, json, api, owl, rdf,
gql, sql, nosql ...

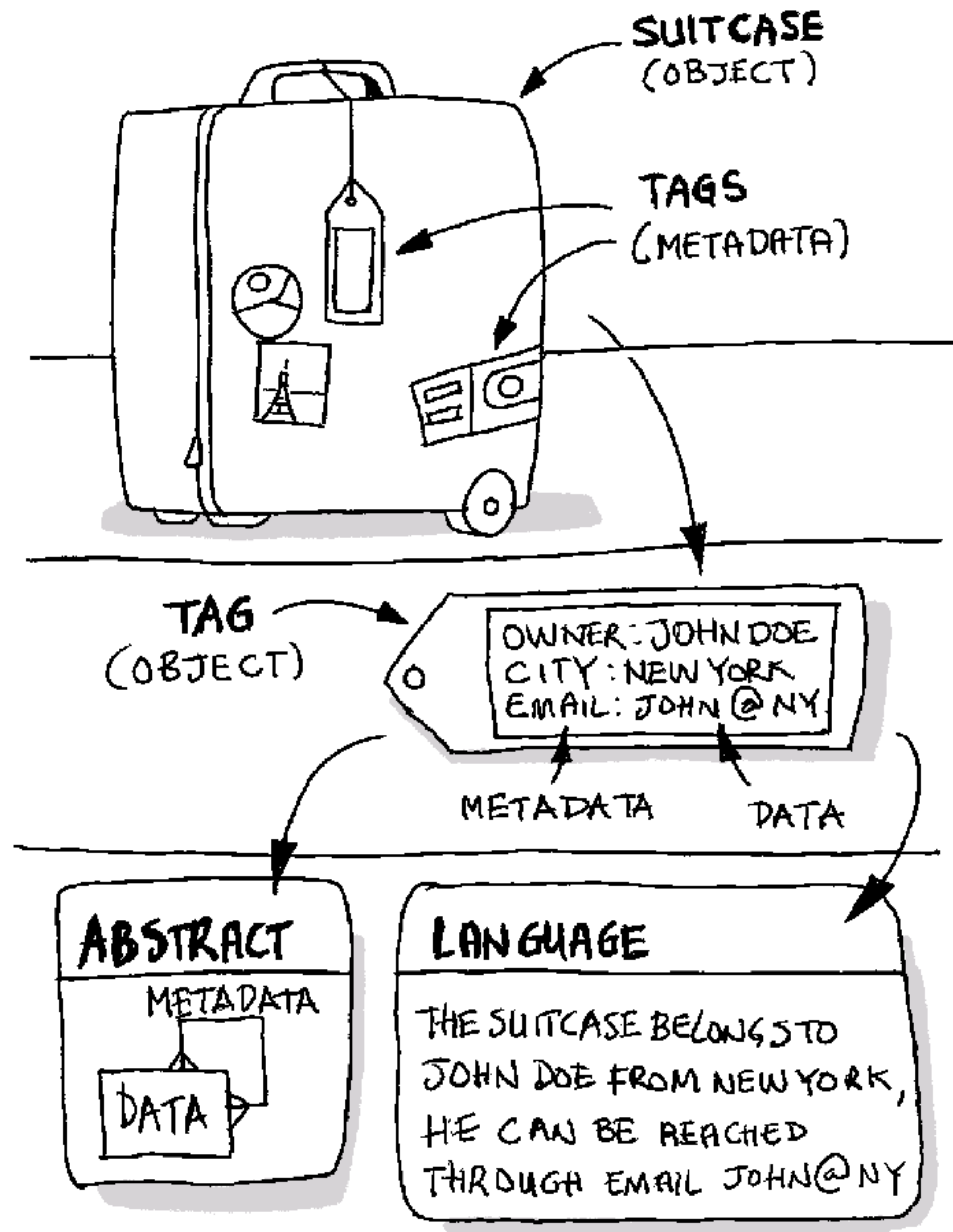
BUT

relations are *the building blocks*

WITH

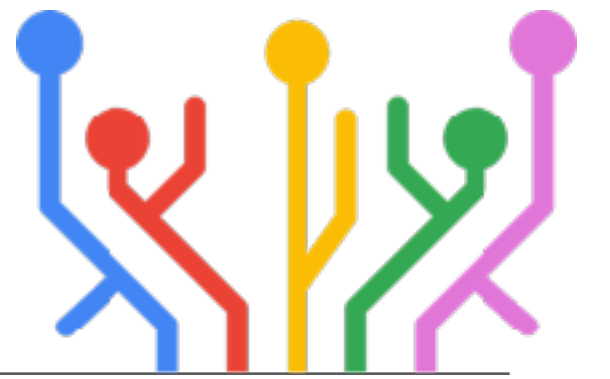
natural language & examples

METADATA, THE DATA THAT GETS AROUND

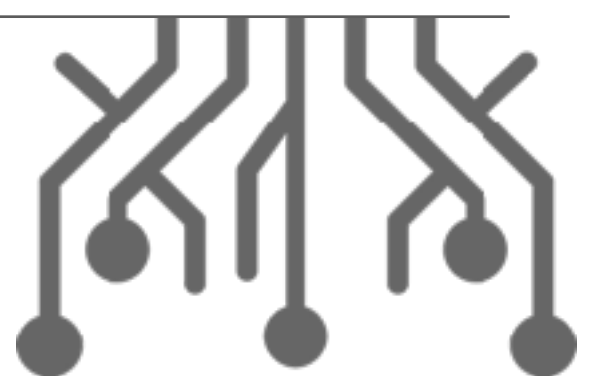


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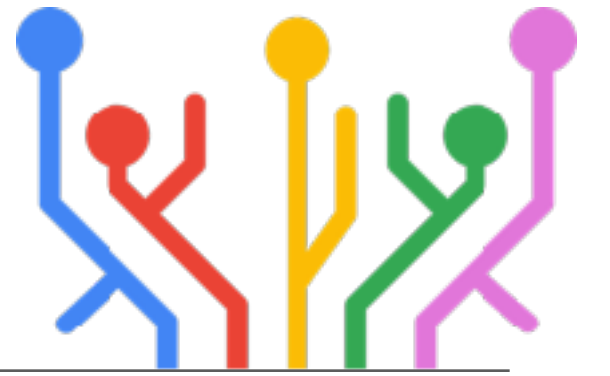
FULL METADATA



- Each building block customizable metadata
- Support for temporal, annotation, transitional, localization
- Fully versioned, multi-user and -lingual
- Catalog mapping for lineage and governance
- Modeling at M0, M1, M2, and M3
- Integrate MIM, and semantic web like SKOS
- Online Publishing
- Artifact generation for technology



FCO-IM BENEFITS

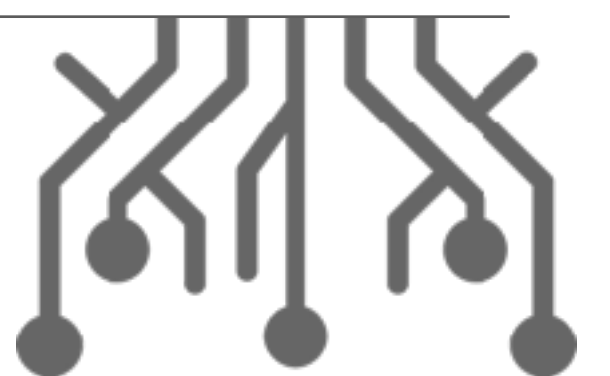


For Stakeholders

- Easier to respond to <correct | wrong | uncertain> statements.
- Stimulates engagement and participation.
- Improves communication and data quality

For Modellers

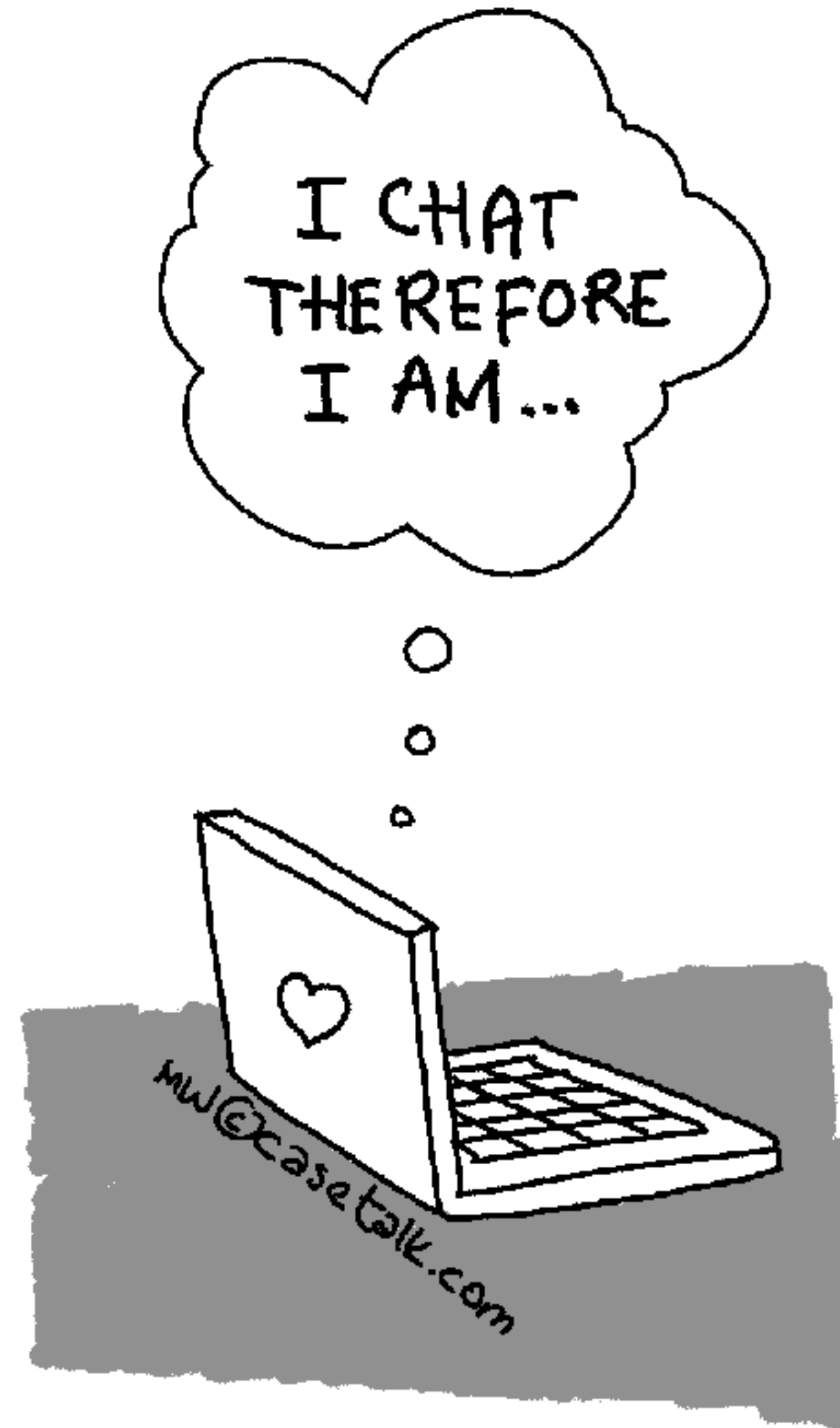
- Trains critical thinking.
- Eradicates implicit assumptions.
- Strengthens use and understanding of terms.





LLM AND DATA

How LLM was mistaken for
the answer to the ultimate
question of life, the universe
and everything ...



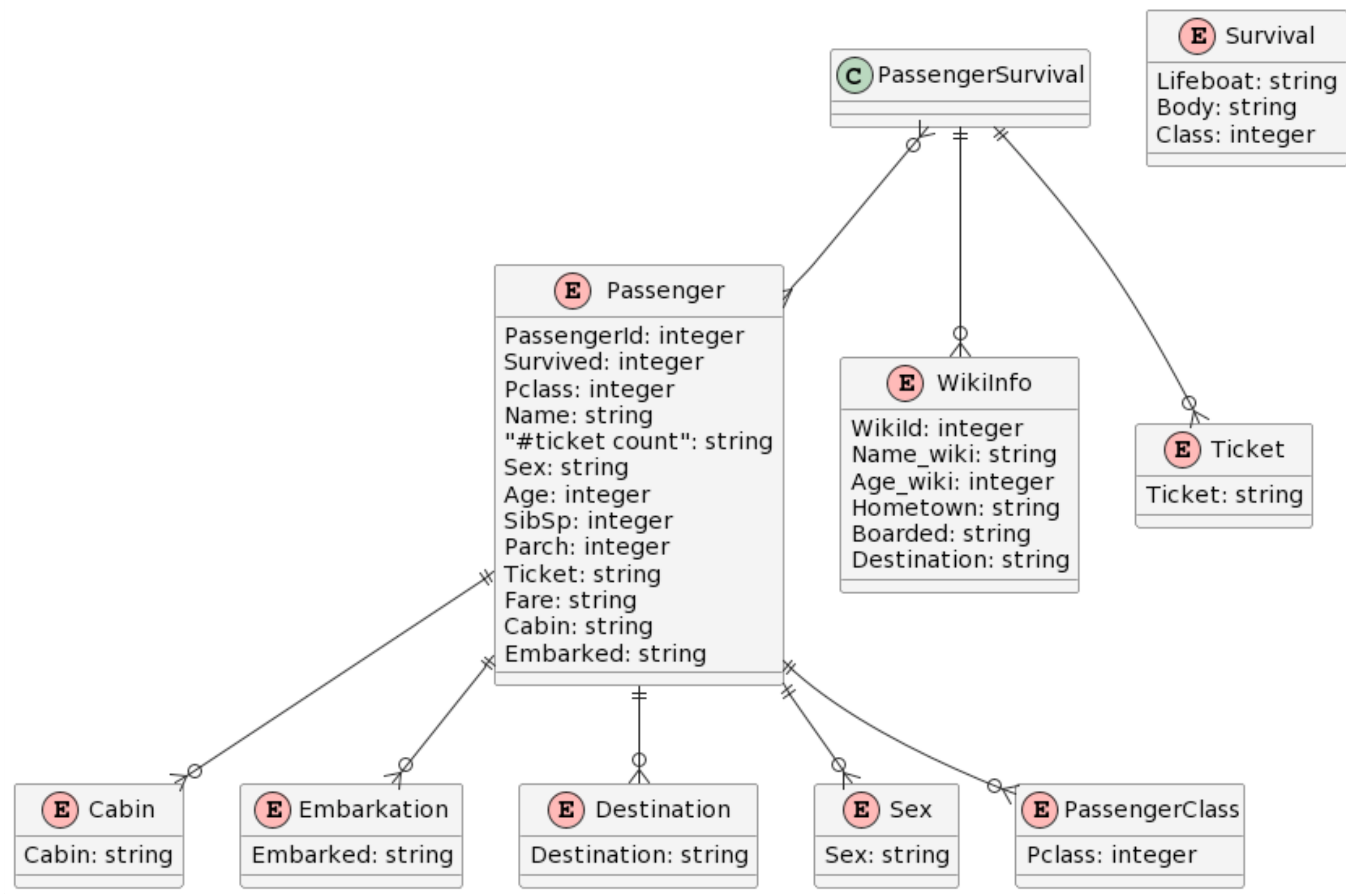
The European Commission
has formally classified
ChatGPT as a Very Large
Online Search Engine,
bringing the artificial-
intelligence service under
the most demanding tier of
the EU's Digital Services
Act.

<https://eutoday.net/eu-chatgpt-search-engine-dsa-supervision/>



PassengerId	Survived	Pclass	Name	#ticket count	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
1	0	3	Braund, Mr. Owen Harris	1	male	22	1	0	A/5 21171	7,25		S
2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Thayer)	2	female	38	1	0	PC 17599	71,2833	C85	C
3	1	3	Bonn, Mrs. Octave (Jill Frances)	1	female	26	0	0	STON/O2. 3101282	7,925		S

- **PassengerId** : Unique identifier for each passenger (integer)
- **Survived** : Survival status (0 = did not survive, 1 = survived) (integer)
- **Pclass** : Passenger class (integer)
- **Name** : Passenger's name (string)
- **#ticket count** : Number of tickets associated with the passenger (string)
- **Sex** : Passenger's sex (string)
- **Age** : Passenger's age (integer)
- **SibSp** : Number of siblings/spouses aboard the Titanic (integer)
- **Parch** : Number of parents/children aboard the Titanic (integer)
- **Ticket** : Ticket number (string)
- **Fare** : Fare paid for the ticket (string)
- **Cabin** : Cabin number (string)
- **Embarked** : Port of embarkation (string)
- **WikiId** : Wikipedia ID (integer)
- **Name_wiki** : Passenger's name on Wikipedia (string)
- **Age_wiki** : Age of the passenger as mentioned on Wikipedia (integer)
- **Hometown** : Passenger's hometown (string)
- **Boarded** : Location where the passenger boarded the Titanic (string)
- **Destination** : Passenger's intended destination (string)
- **Lifeboat** : Lifeboat number (string)

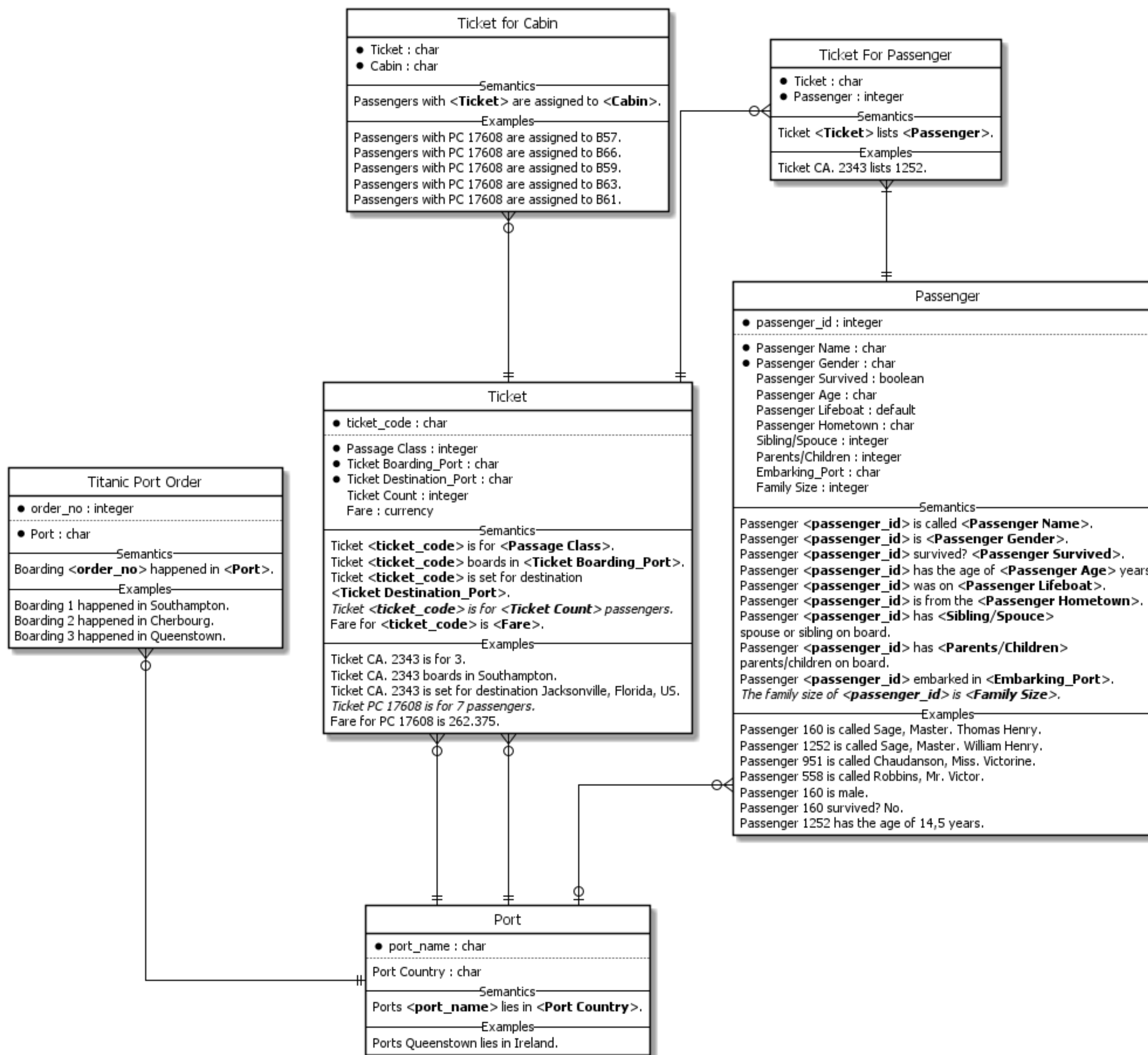


NOT EVERYTHING TAGGED IS SEMANTIC





CASE TALK



← Business Entities

← Business Friendly Attributes

← Business Language at Type Level

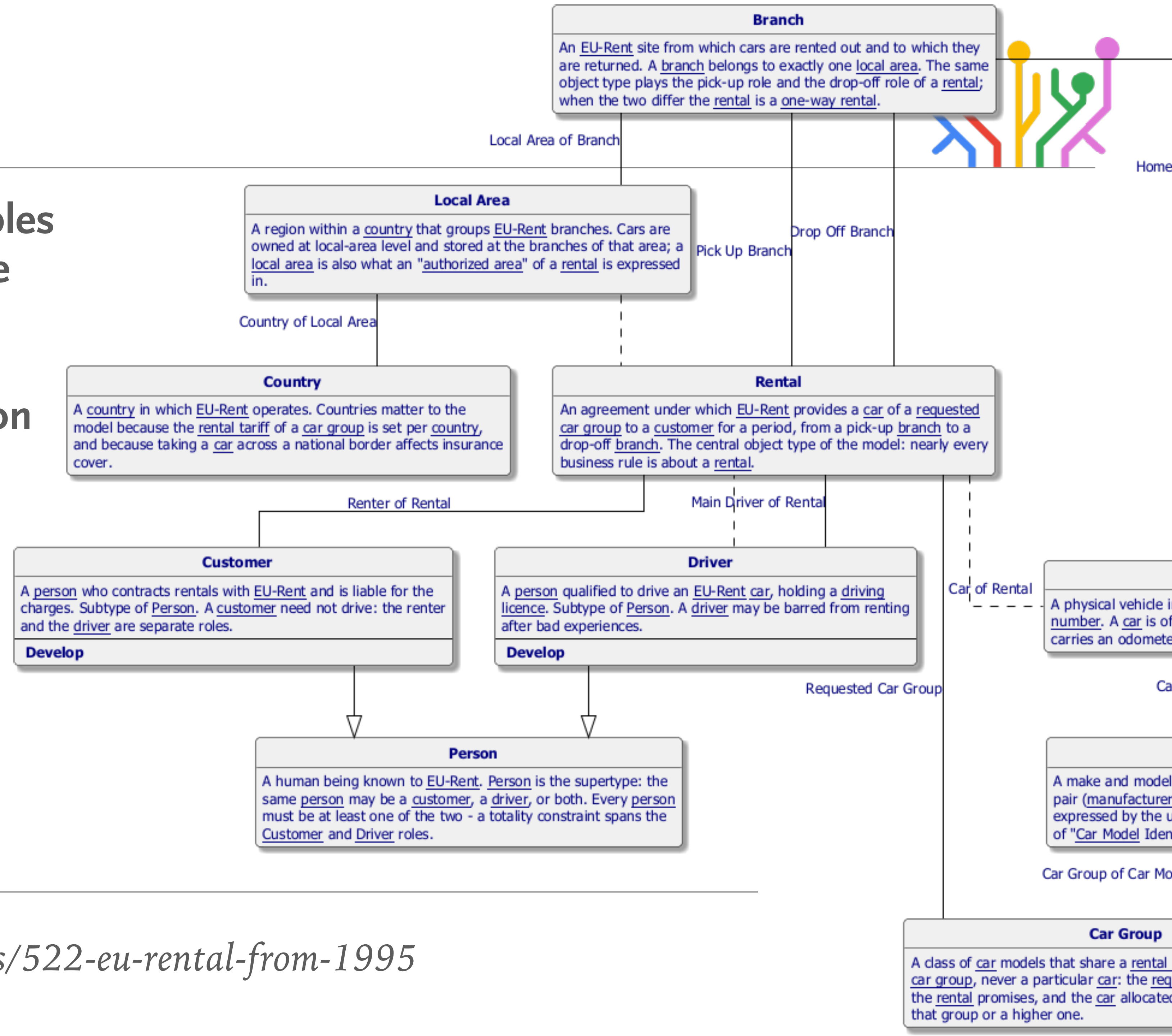
← Business Language with Data

EU RENTAL (1995)

- On the internet various examples surrounding the EU-Rental use case are described.

Use that to build an information model in casetalk.

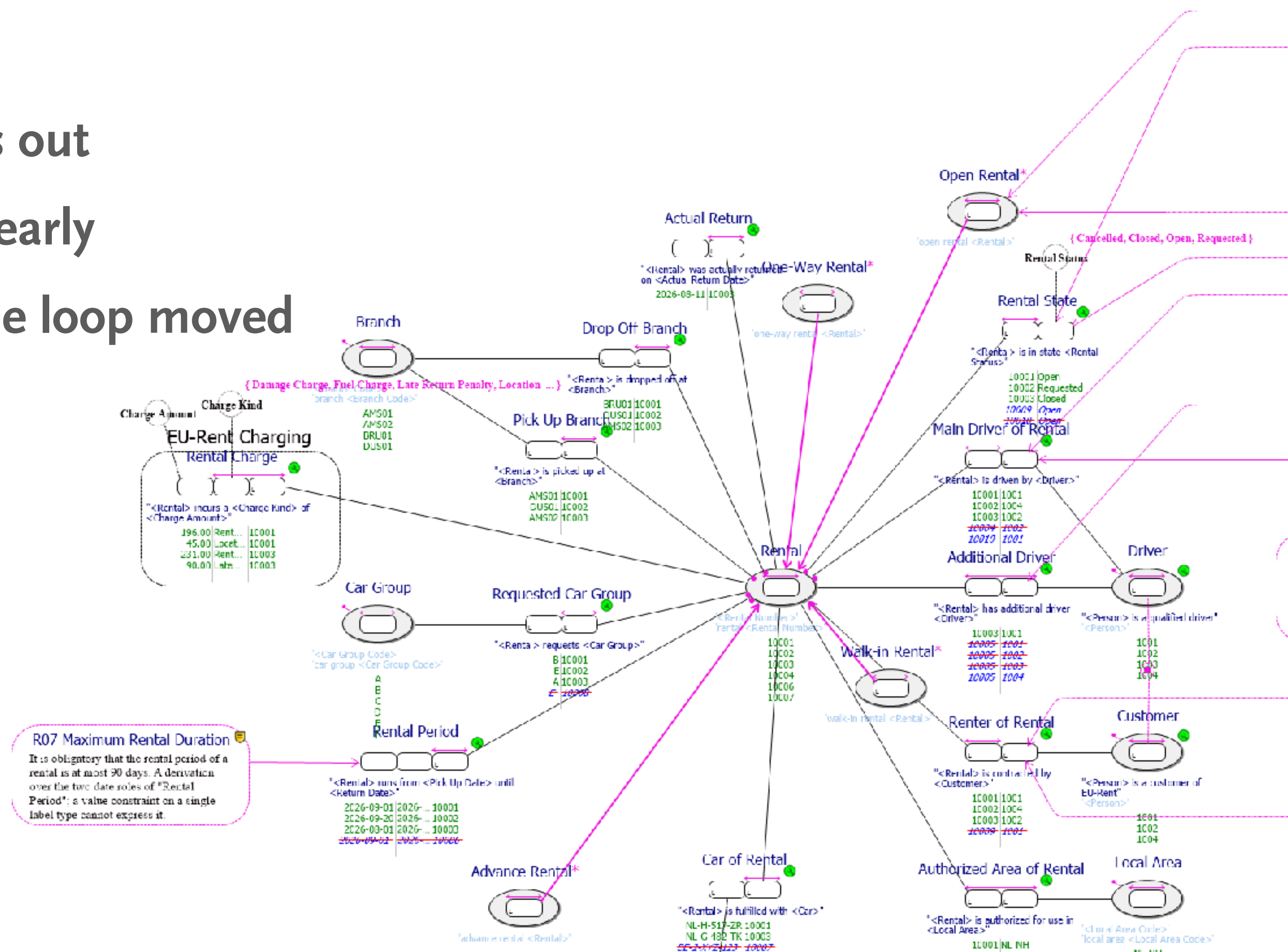
Include examples, rules, and annotations.





EU RENTAL - LEARNED

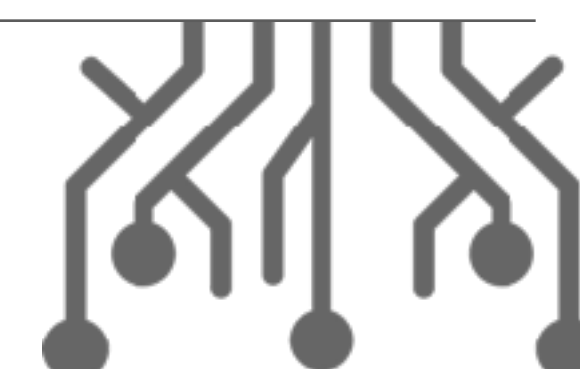
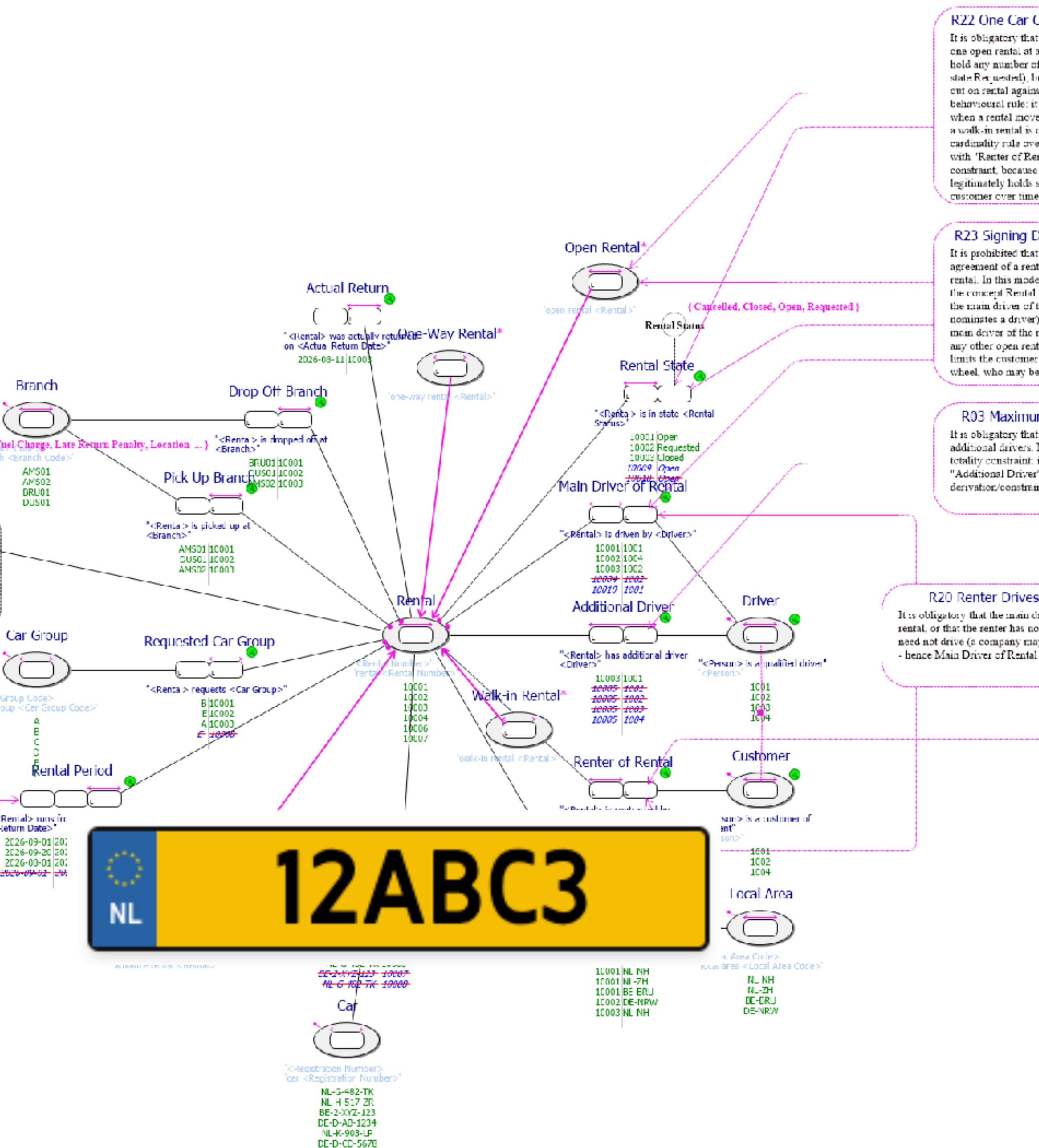
- The sources are the model
- The grammar is the guardrail
- Population is where the truth comes out
- Corrections are cheap, if they come early
- The human is not out of the loop; the loop moved



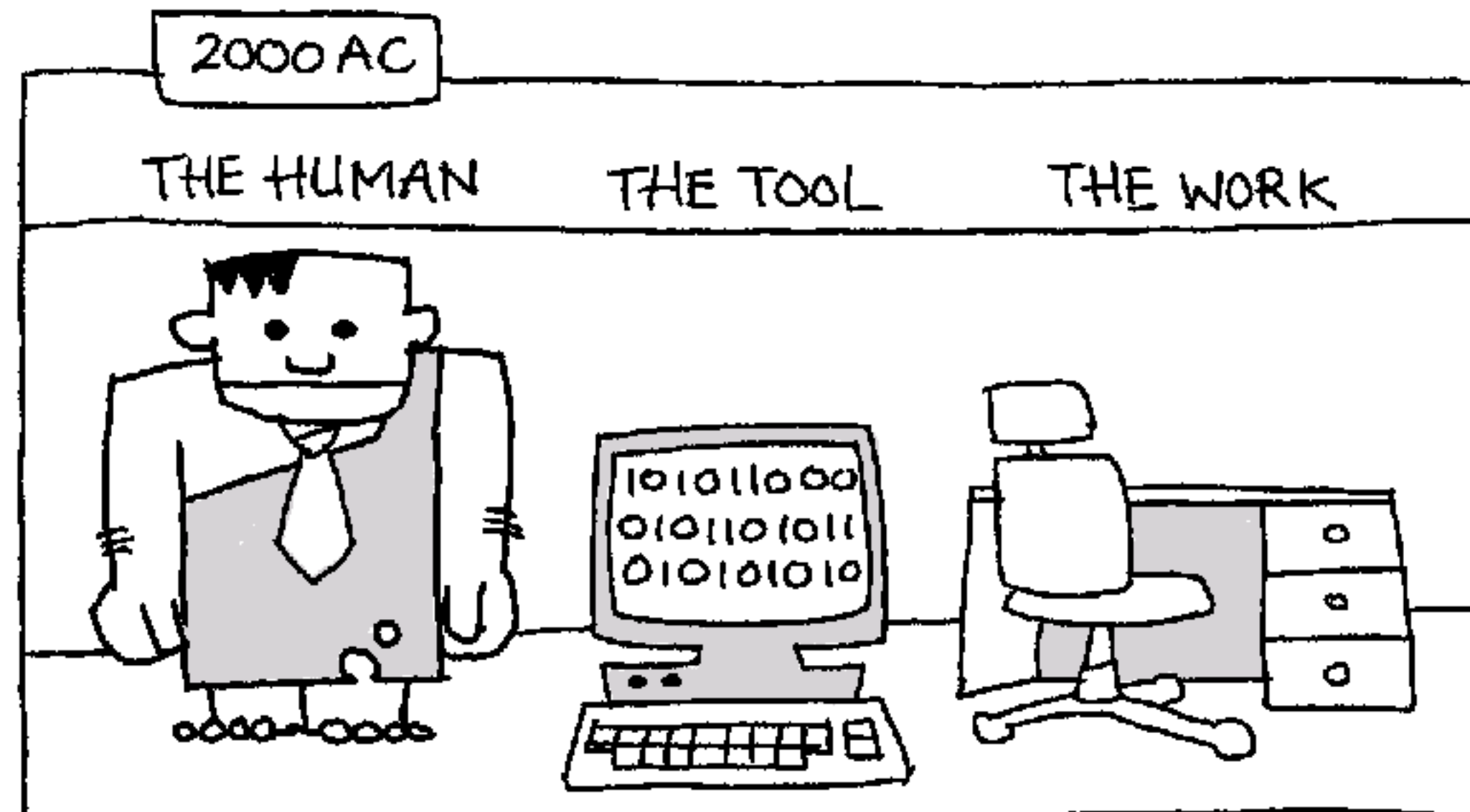
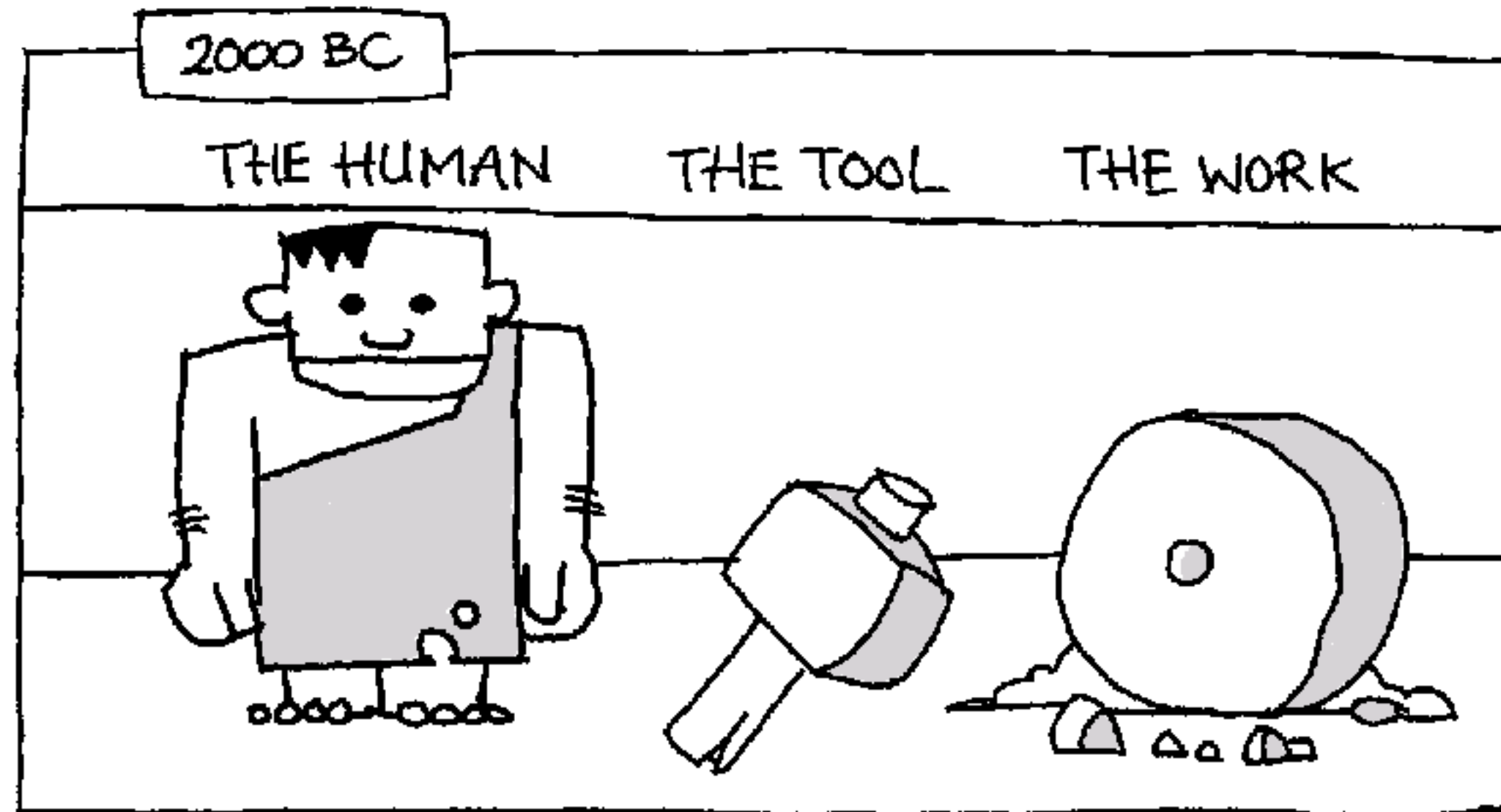


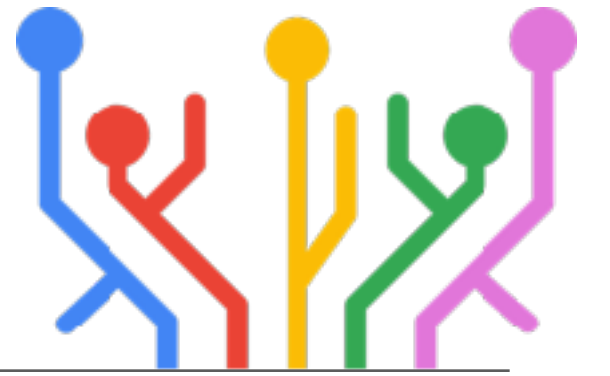
OBSERVATIONS

- It does what you say — and nothing you don't
- It reads the summary, not the original
- Where it doesn't know, it doesn't leave a blank
- When it breaks, it says "done"
- Some questions only a person can answer



... AFTER 4000 YEARS,
TOOLS STILL NEED HUMANS
TO DO THE WORK...



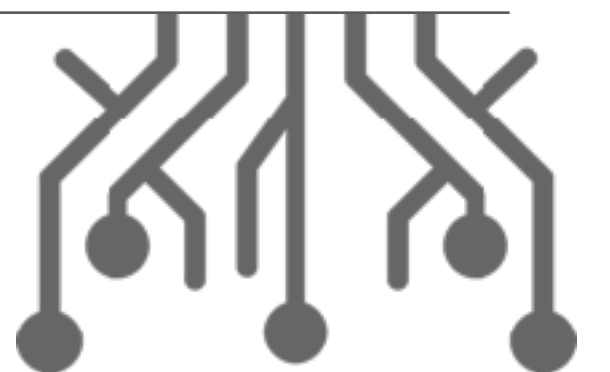


Models and LLM

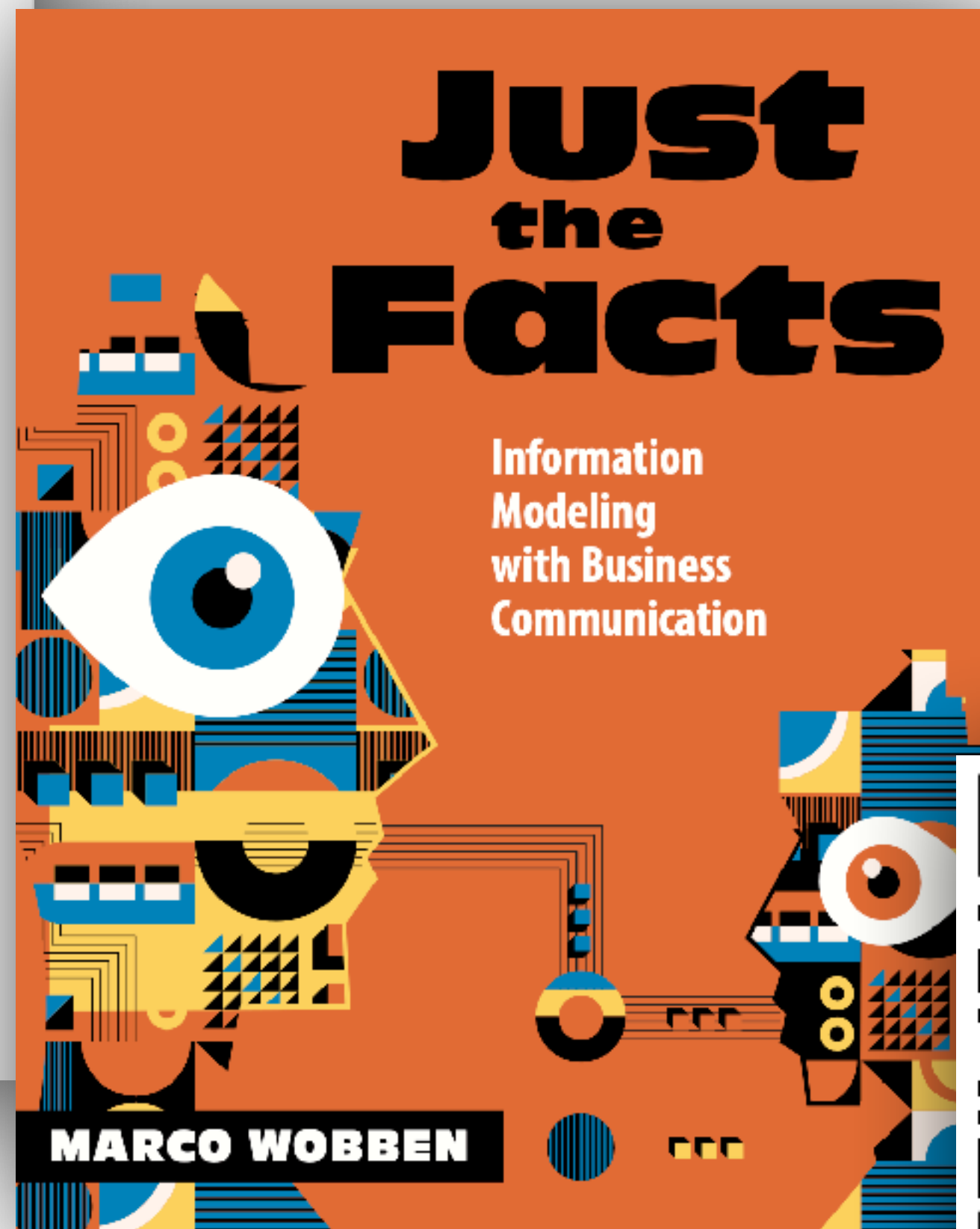
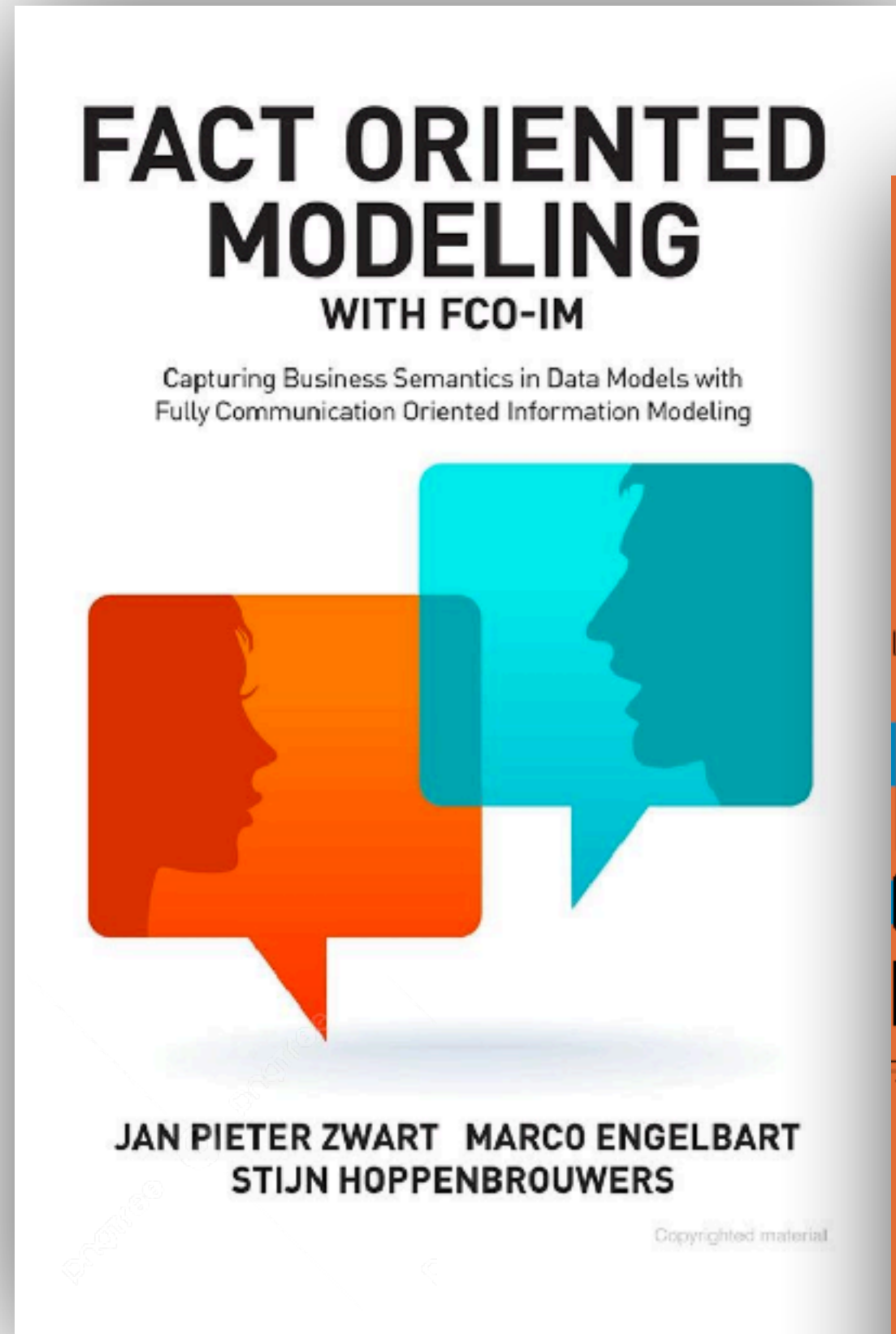
- FCO-IM rigor produce high **quality** models
- Models by and for humans require **verification**
- **Ground** meta discussions with examples
- LLMs are **accelerators** for text based models

And

- Be aware of your positive **bias**
- Find the constraints, the **NOTs** are crucial
- The **questions** may be more important than the answer



Marco Wobben
www.casetalk.com



THE MEANING OF DATA

